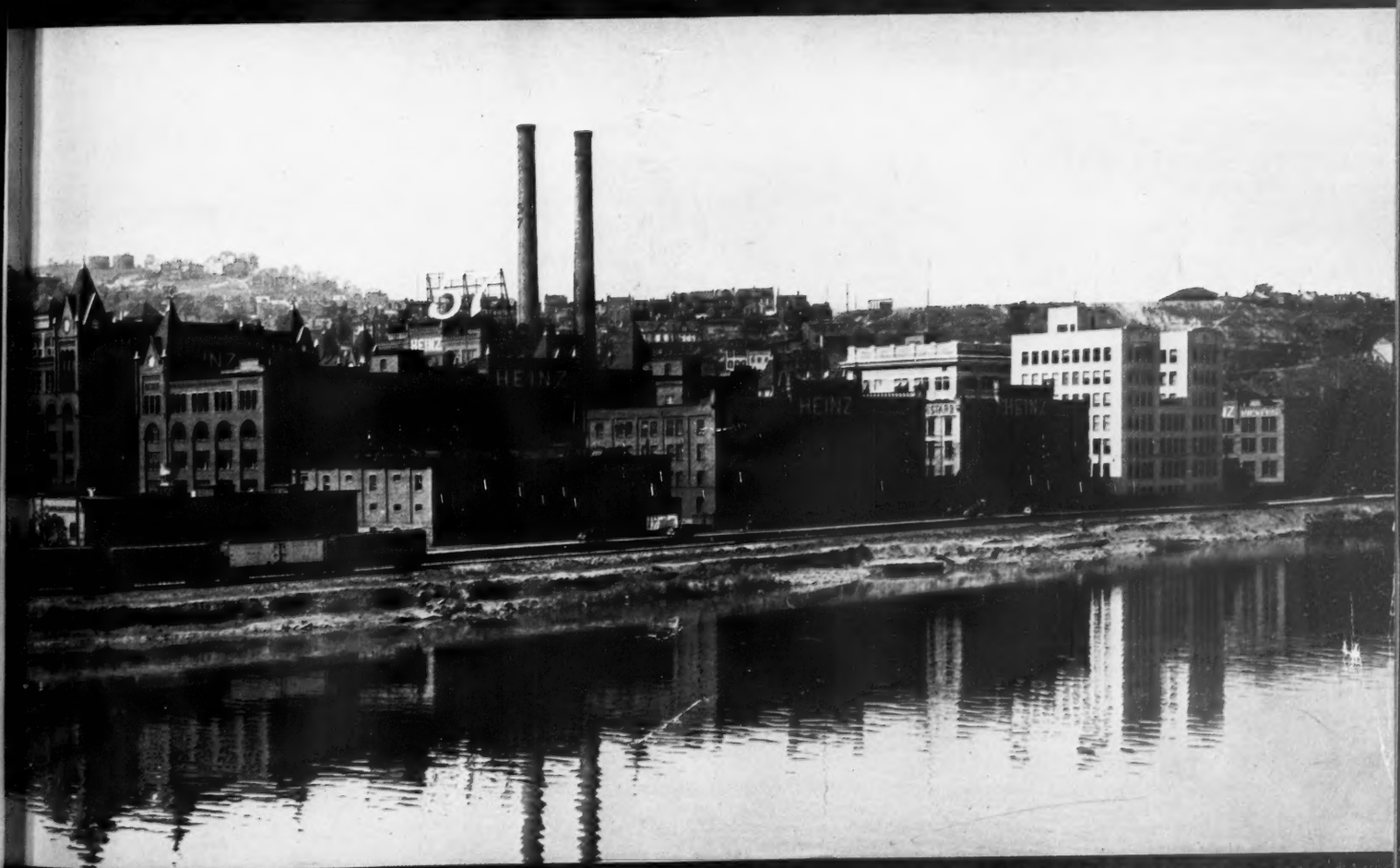
FOOD INDUSTRIES

JANUARY 1939



HOMES OF FAMOUS FOODS . . . HEINZ PRODUCTS, PITTSBURGH

IN THIS ISSUE: Frozen Foods Directory; Metering Food Liquids

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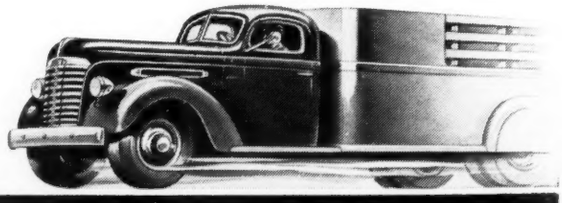

THE TRUCK GMC OF VALUE

TRUCKS ★ TRAILERS ★ DIESELS

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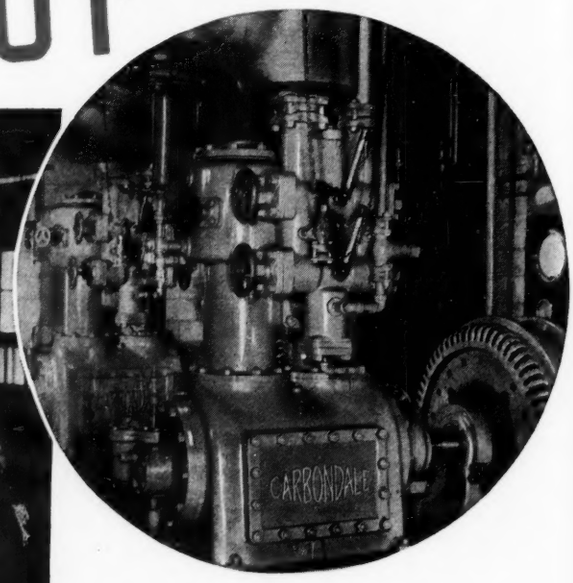
BIGGER ICE CROP PER KILOWATT



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FOOD INDUSTRIES

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Established 1928—McGraw-Hill Publishing Company, Inc.

Vol. 11, No. 1

Laurence V. Burton, Editor

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JANUARY 1939

The Talk of the Industry

» AFTER BREATHLESS WAITING for the anti-monopoly investigation to begin in Washington, the inquiry appears to be a reasonably sincere search for facts and truths.

» PROFIT-SHARING, it developed during another investigation, is all right if there are any profits to share. The big problem is how to keep up with the Joneses.

» ONE of our interesting callers last month was the general superintendent of a large food concern in Sweden—the land that is all peace and harmony.

"During the days of the Czechoslovakian crisis," he said, "very little productive work was done in our plant." Reason: everyone was busy

constructing bombproof shelters at the factory—just in case.

Evidently the Swedes are not very trusting souls.

» BIGGEST SURPRISE of the month passed is a new type of paper bottle which, it is claimed, can be constructed to hold internal pressures up to 90 lb. per sq.in. and sell for less than 1 cent. And if it is all that is claimed for it, it will be suitable for ginger ale, carbonated beverages, beer, milk, etc.

Verily, the war of the containers will wax more vigorous.

» SHORTLY AFTER the first of the year, the first batch of regulations under the new Food, Drug, and Cosmetic Act will be promulgated in final form. Unless the Food and Drug Administration whole-heartedly defers to opinions of manufacturers and tones down the tentative regulations, many labels in the future will be the most bizarre and unsalesmanlike absurdities you ever saw. The proposal to require the street address of a manufacturer on all labels leaves one almost speechless.

» CERTAIN HIGHLY SPECIALIZED JOBS in the food field are rather difficult to fill. For example, one concern in the business of manufacturing derivatives of corn reports that it recently searched the entire country for a trained mill stone dresser and could not locate such a man until the United States Employment Service was called in. They found a single prospect in Durham, N. C. He now has a job in Illinois. The old buhr-stone mill has not been completely replaced, but if stone dressers disappear some new technical problems may arise.

» PRODUCTION OF WHEAT FLOUR per man-hour has gone up eleven points in the period between September, 1936 and 1938, whereas man-hour production in slaughtering and meat packing has dropped off one point in the same period according to the National Industrial Conference Board. These points are really per cents of an index number which assumes that the average of all manufactures for September, 1936, is 100.

These are interesting but not significant figures as they pertain to meat packing. After all, the number of animals the farmers choose to raise and market is the determining factor.

» A. C. NEILSON, of market research fame, has discovered that executives average correct decisions only 57 per

cent of the time. Which is a shade better than flipping a coin—and far worse than the usual estimate of 70 per cent. But, he explains, most executive problems have several possible solutions—one of which is probably better than the others. If there were only two alternatives, then tossing a coin would result in 50 per cent accuracy. Where there are three alternatives, the coin tosser would be right only 33 per cent of the times. Which goes to show that an average executive is about twice as good as a dub.

» Speaking of executives, the head of a huge company once told us that his biggest problem was, not that of making the traditional seven correct de-

cisions out of ten, but of making fourteen correct ones out of twenty in the same length of time.

Looking at the Brighter Side

A MONTH'S STUDY of the Anglo-American trade pact has revealed a number of places where U.S. food manufacturers feel that they have been sold down the river, especially by the Canadian concessions. But, one suspects that an equivalent number of Canadian and U. K. manufacturers are experiencing exactly the same reactions.

The whole effort is the concrete expression of the ideal of Secretary Cordell Hull, the greatest statesman who has been in Washington for many a year. It should be recalled by those who believe that their businesses have been sacrificed on the altar of an ideal that Britain was forced to send over two Cabinet Ministers to defend the British position. As one of them said to us, "You Yankees would not leave a shirt on our backs if we did not look alive."

If international peace is worth striving for, if the insane trend among certain foreign nations toward a self-contained national economy is a hazard for peace, if a resumption of foreign trade is good for the participating nations, if the spread of dictatorships is worth stopping, then each of us—every American and every citizen of the British Empire—should do our utmost to reach the objective of the treaty. That objective is permanent international peace through the resumption of foreign trade. The mutual concessions are merely means toward that end.

"Pension Jobs" Under Wage-Hour Law

THE OLD CHAP who sits at the factory gate, or who signals passing motorists when the string of freight cars must be spotted at the plant siding, or who does other minor "pension" jobs, is not really in danger. If he qualifies "by age or physical or mental deficiency or injury," he may be cared for without any violation of the wage-hour standards.

Managements disposed to care for these oldsters can do so without fear, if they will just use their generosity with a slight dash of common sense. But woe be it to the management which tries by this scheme to lower wages or extend working hours *outside* the law, to folks that are not qualified for exemptions.

Let us hope that these pensioners are kept on, on a proper basis.

Vitamin B_1 Determination Made Easy

INSTEAD of determining the amount of Vitamin B_1 in foods by the long tedious biological assays which take two to three weeks for a single test, it can now be done in two hours by the thiochrome fluorometric method reported by L. R. Cerecedo and D. J. Hennessey of Fordham University at recent meetings of the American Chemical Society.

With the advent of this new discovery, which is almost as simple as the titration method of determining the amount of Vitamin C in a food, there should follow a rapid increase in our knowledge of the role of Vitamin B_1 in human nutrition and of its stability during processing, distribution and cooking of food.

It is a curious fact that, where animal feeding—the biological assay method—is the only method of estimating the amount of the vitamin present, our knowledge of the physiological function of the vitamin is confined largely to what it will do in animals, usually rats. We then try to infer what it will do in the human body; but lacking quick methods of quantitative measurement, the inferences have accumulated at a very slow rate. Progress in the future should be much more rapid.

Shredded Wheat Decision

PROTECTION of one's proprietary right to the use of a trade name, especially a name like Shredded Wheat, is a very difficult task as National Biscuit Co. has learned after ten years of litigation with the Kellogg Co., which was finally settled by the 6–2 decision of Supreme Court of the United States on Nov. 14, 1938. Shredded wheat is now a generic term. Anybody may use it.

Those who authorize the expenditure of huge sums for the advertising

Hors d'Oeuvres

• Five grades of paprika are marketed by Hungary, the name of the grade being indicative of the hotness of the variety. Translated into English, the names mean (from mild to strong) delicate noble-sweet, noble-sweet, near-sweet-goulash, Rose, hot. The delicate noble-sweet is a new development. In Hungarian it is called "csemege-edesnemes." Try the name on your best girl sometime. Or would one of the warmer varieties be more fitting?

• *Studies of the vitamin A content of 22 kinds of cheeses show Roquefort, Camembert, and Liederkranz rating high. Lowest was cottage cheese. Where was limburger? Pretty low in vitamin A but going strong otherwise.*

• Sauerkraut has been found a good source of vitamin C. If the kraut industry had discovered this a couple of decades ago, the public might have looked at orange juice and spinach and said "to hell with them."

• *In the early days of this country, sturgeon were abundant in most of the rivers of the Atlantic Coast. William Penn in his correspondence often commented on the incredible numbers of these giant fish which ascended the Delaware each spring. A little more than a century ago the taking of sturgeon roe for caviar began, and soon after the delicious quality of smoked sturgeon was discovered. Now these fish are rare in most localities as a result of overfishing. A case of killing the fish that lays the golden egg.*

• Engaged in making 160,000,000 lb. of honey annually in this country are four and one half million colonies of bees. With four swarms of bees to turn loose on every man of a million-strong army of invaders, why worry about national defense.

• *We hear by the muscatel vine that the meat packers are getting fed up with the dairy industry's promotion of milk from "contented cows" and are threatening to market "sausages from pigs that died happy." Only a rumor, of course.*

• The expression "bully beef" was derived from the efforts of seamen to pronounce "soup and buili,' 'a preserved food popular in Britain more than a century ago.

• *An aluminum safety valve with a glass check ball has been developed for cows. Permanently inserted in the cow's side, it releases the gas pressure caused by eating too much alfalfa and avoids having to vent Bossy with a pitchfork to save her bacon. Now if you find a funny gadget in your hamburger, you'll know what it is.*

• Michigan Liquor Control Commission has banned the advertising of food recipes containing alcoholic beverages on account of the possible effect on juveniles. If the kid wants cognac let him stand up to the bar and drink it like a man.

F. K. L.

of trade names should ponder this decision and give much thought to the basic law governing trade names. Also give much thought as to how their trade name is used in advertising and sales promotion.

Remember the old signs, "Picture ahead. Kodak as you go"? You haven't seen one in years. They were torn down by Eastman Kodak Co. because some smart hombre discovered that a patentable trade name must be a coined word used in the nominative sense—as a noun—and that Eastman was using it as a verb in the foregoing signs. In other words, Eastman was voluntarily relinquishing its rights to its own trade name. When they realized that fact those signs came down as fast as they could be found, and disaster was averted. According to one version, the removal of all these signs was very costly because there was no record of their locations.

Some trade names may, however, be so vulnerable in the light of the Shredded Wheat decision that any money expended to defend one's exclusive right to them will be sheer waste.

Further Shifts to the South

IN SPITE OF vigorous opposition to oleomargarine by organized dairy farmers and breeders of dairy types of livestock, another margarine plant has been opened in the United States. It is immaterial that Swift & Co. owns this plant, located at Atlanta, Ga.—the first in that state.

Just why hostile opposition to margarine continues to be justified on the ground that margarine is inimical to the success of dairy farming is hard to understand. When it is realized that this new margarine plant, with its capacity of 3,600 lb. of finished product per hour, will require the milk output of from 2,500 to 3,000 Georgia cows, one wonders if the anti-margarine group are aware that good margarine cannot be made without milk.

More important, however, is the fact that this new plant will be an outlet for roughly 25,000,000 lb. of Georgia grown cottonseed and peanut oil. To us, this does not presage a great increase in margarine consumption. But it does indicate the rapid movement of our economic life toward a goal that FOOD INDUSTRIES has been predicting for years. Make no mistake about it, ultimately the South is going to feed itself and Secretary Wallace's efforts to control cotton production merely serve to accentuate and stimulate the rapidity of the shift of food production from the North to the South as far as the Southern food market is concerned.

To continue to increase the already excessive impost taxes on margarine can result in only one of two outcomes: either the South will be *compelled* to produce its own butter or its own margarine. In either event, both the Northern butter fat producer and manufacturer are bound to be the losers. And it is plainly apparent that, on exactly the same per pound price-basis, Southern butter will be a more formidable competitor of Northern butter than Southern margarine. Especially so, because most people prefer butter to margarine if they can pay for it.

The only way in which the producers of butter can stop the shift of edible fat production to the South is to prohibit the South from owning cows, from producing cotton and peanut oil, or buying any edible fats and oils for manufacture there. Which is to say that unless cotton exports revive in a big way, the Northern dairy producer is one of several types of Northern food suppliers that will pay the real price—not the South.

That Proposed Institute of Human Nutrition

ESTABLISHMENT of an Institute of Human Nutrition as recently proposed to Associated Grocery Manufacturers of America by its legal counsel, Charles Wesley Dunn, is a worthy ideal. It deserves active consideration by all food manufacturers, both in and out of AGMA.

Aside from the humanitarian aspects of greater progress in the science of nutrition, which would, of course, be splendid raw material for public relations activities, certain by-products of fundamental research can be anticipated. For fundamental research often brings to light many such ideas of tangible value. But the purpose of an investigation of the character proposed by Mr. Dunn requires a different sort of appraisal than the average business man customarily gives.

Measurement of the success of research must be differently done according to the purpose of the investigations. In the case of a new process which a research laboratory may propose, it is quite proper to study its economic merit. In research findings which relate to products, byproducts or waste, it is necessary to use the dollar test. But no dollar test may be applied to measure the usefulness or value of research in human nutrition or human welfare.

AGMA will find, therefore, that an entirely new standard must be set up in such an institution and that its plans and performance must be judged from the standpoint of pure science and public well-being—not from any commercial, trade or even technical aspect.

If the food industries are desirous of rendering a great service by determining much needed new knowledge with respect to human nutrition, such an institution as is proposed will be very valuable. All who desire the long time advance of the industry will do well to support the project in this spirit of pure science.

Proposed Model State Food and Drug Law

A MODEL or uniform state statute to control foods, drugs, and cosmetics has been proposed by a committee of the Association of Food and Drug officials of the United States, consisting of C. S. Ladd, Food Commissioner and Chemist, Bismarck, N. D., as chairman; W. S. Frisbie, Chief, State Cooperation, Food and Drug Administration, U. S. Department of Agriculture; and A. L. Sullivan, Food and Drug Commissioner, Baltimore, Md. The committee urges that the proposed statute be introduced in all state legislatures meeting during the winter.

The effort is, of course, to secure uniformity of state and federal control, a condition highly to be desired as will be appreciated by referring to the digest of state food regulations in the FOOD INDUSTRIES CATALOG AND DIRECTORY. To describe the vagaries of existing state regulatory conditions as absurd is no exaggeration.

Since the model statute is patterned closely after the new federal law, though in much more understandable language, it will not be analyzed at this time, except to state that it *provides for quality grades* (plural).

Though we believe that the proposed uniformity of control would not, in-so-far as uniformity is concerned, create any hardships for food manufacturers, we are extremely skeptical of the final outcome of the proposal. Legislatures will probably tamper with or alter some sections. But more important is the likelihood that regulations issued under such a proposed statute will be just about as diverse as exist today, for except for a few references to federal regulations the door will be wide open for all manner of individual interpretive regulations. Nevertheless the effort will be worth while, particularly for the better state control of drugs, cosmetics and devices.

Better Public Relations Must Be Based On ALL The Facts*

By C. S. CHING
U. S. Rubber Products, Inc., New York, N. Y.

LABOR RELATIONS in the past four or five years have been over-emphasized in some instances. We have heard statements made that certain phases of labor relations are the things that are keeping us from going into permanent prosperity. I think probably this is a little extravagant. There are so many factors which enter into a national prosperity that we should not attempt to base our calculations on any one factor. If we do, we may be accused of not knowing our business.

As I see it, the function of industry is to produce goods and to serve society by our activities in this direction. To the extent that we serve society, society will compensate us. If we are unable to serve society and do not get compensation that will permit us to expand, then we must fall by the wayside. But society has an uncanny way of measuring the value of our services. I believe that American industry in the past has done an excellent job in serving society and this is evidenced by the standard of living in this country, which is far beyond the standard that has ever been established by any country in the history of civilization. True, we have had a number of advantages in the way of national resources, and are a sufficiently young nation so that up to a comparatively few years ago our people were all very much alive to the fundamental principles on which our country had gone ahead and on which our whole economic and political system was based.

Possibly we, in industry, took too much for granted and expected that people would realize all of the benefits of industry and its place in the economic system. It is trite to say that we didn't do a good selling job to the public on the benefits of industry, but that is about what happened. We have had many instances, due to public pressure, of people attempting to tinker with our economic structure and this, I believe, has been due more to a lack of understanding than any desire to damage this delicate machine.

In regard to industry trying to build up public goodwill, the greatest public that they have and the easiest to reach is their own employees and their own customers. If these two groups are satisfied as to the treatment they receive and the standards set up by an individual company or industry in its relationships with them, they have started the yeast working in the whole great public.

There is something more, however, than having customers and employees in a position of merely not criticising your actions. There is a great constructive job that can be done by having them know more about you. We all love to delve into interesting things. It is a well-known fact that every person likes to have something to boast about. In this respect, employees of industry are just the same as we in this room. They want to have something about which they can boast and be proud of in the company with which they are connected. They like to be connected with a well managed, going concern. They like to know what that company is doing, and when I say this, I am not talking about issuing financial statements to employees and that sort of thing. I am

* Summary of a paper presented before the annual meeting of the Associated Grocery Manufacturers of America, Inc., New York City, Nov. 28, 1938.

talking about the common, every day, run-of-the-mill thing that goes on within an organization: a new selling idea, a new product, a new development. All of these things make employees proud of their company.

Thirty or 40 years ago employees were not particularly interested in the affairs of the company because, having been recruited to industry, they found themselves enjoying a higher standard of living than they ever had enjoyed before and were perfectly willing to take for granted everything that the boss did and said. This did not result in any exploitation by the boss except in isolated cases. But we are not dealing with that type of employee today. In 1890, only 5½ per cent of the population of the United States had any kind of secondary education, but today that percentage is up around 40, and in the case of the state of California, it is 84 per cent. We must realize that in dealing with these employees, the product of the American educational system who have had the equivalent of a high-school education, we are dealing with a mighty force that cannot be driven and can be led only on the basis of information which they receive from us so that they can intelligently think things out for themselves. If we do succeed in appealing to the intelligence of a group of this kind, we have a much more stable condition than if employees took everything that we handed out to them without question.

The important thing, as I see it, in labor relations today is mutual confidence, and if we are seeking confidence, we must give it. We must not impute to employees or their leaders wrong motives until we are convinced that the motives are wrong. We must approach this whole matter with an open mind, realizing that there is no permanent answer to the matter of human relations; it is always in a state of flux.

IF I were criticizing American industry on the one hand and legislators on the other, I would say that probably the worst of our troubles come from both groups being in too much of a hurry to find all of the answers in too short a space of time. We are either supreme optimists or wild alarmists most of the time. If you would review the things that we thought were going to wreck the world or wreck this country during the last ten years, you would find that you had forgotten most of them, and very few of us remember the things that we were so excited about a year ago. Ten or fifteen years is a very short time in the life of a nation, and if we are successful in finding an answer to some of these problems within ten years, we will be doing very well.

Meanwhile, our responsibility is to see to it that we are not making any contribution to the building up of what, in my mind, is the most dangerous thing that confronts us today—class consciousness. We must so conduct ourselves that we cannot be accused of this. We must look back and gain by experience; look to the present and make comparisons with other countries; look to the future with faith.

People in the older countries said that this country could never be a united nation and endure because we could never assimilate the French of Louisiana and the Spaniards of the Southwest. We not only did that but we assimilated the peoples of practically every nation in Europe and were able to demonstrate to the world that we were a united nation. The problem was a great one and was only solved under our free system of government, coupled with the tolerance of all the groups. To a country whose people are all of one race and speak one language, this would look like an impossibility, and yet today we see some of those countries torn by internal strife. We in this country are looking forward to the greatest armament program in which we have ever engaged and it would be a sad commentary on our past performance if we were unable to make use of our past experience and go forward as a united nation. This can be accomplished only by mutual confidence on the part of all of the elements of our society. There are opportunities for many conflicts arising between organized groups in our country, and if we don't approach this matter with a view to building up mutual confidence, we might find ourselves tearing apart a united nation by class consciousness, after having succeeded in doing a job ten times harder in uniting racial groups.

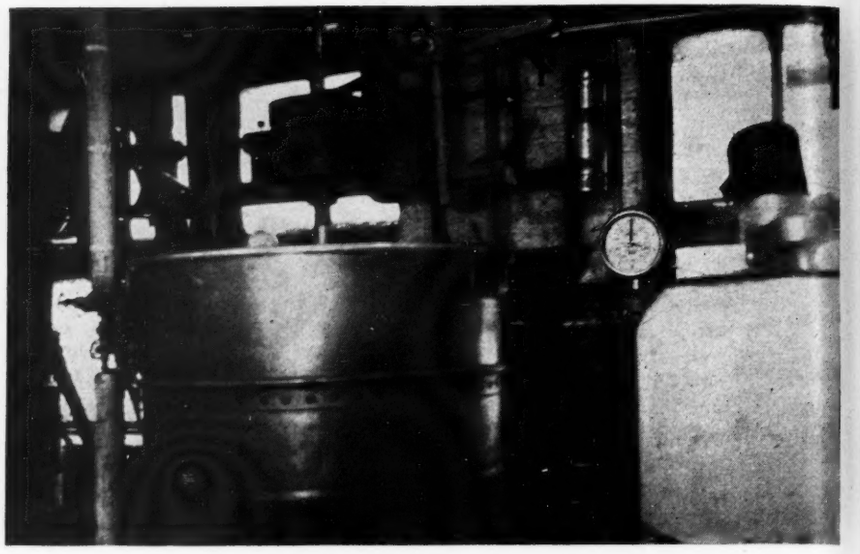
In approaching these matters, we must keep our prejudices and emotions suppressed and realistically try to get at what the real facts are, what the other fellow's point of view is, and deal with these questions on the basis of principles rather than giving vent to our own personal ideas and emotional impulses. If we so conduct ourselves that we are worthy of the confidence of our employees, if we give them the necessary information on which they can base their own opinions, we don't have to worry very much about the type of organization with which they affiliate themselves, because they are quite capable of selecting leaders for themselves.

During the past few years, we have had many things done in employer-employee relationships which have been a blot on the name of our nation, but that again I think is a past phase, and the reaction of the public and our employees to the wrong method of approach to the problem has gotten more sanity into the situation. If we base our conclusions and make our decisions on the basis of principles rather than on prejudice and intolerance, I think that during a period of the next three or four years we can demonstrate to the world again that we have the ability, through patience and tolerance, to work out our problems on the basis of confidence and cooperation and not on the basis of class consciousness and conflict.

PUBLIC RELATIONS IN THE *Food Industries*

GOOD LABOR RELATIONS not only require that employees be satisfied with the treatment they receive and the standards set up by the company for which they work. Something more is needed. Employees must be informed about company activities, company products, and company standing, so that they may have a proper pride in the results of their work. There must be mutual confidence between employees and employers, based upon an informed opinion. This alone can prevent the growth of class consciousness.

Education has so spread in the United States that in some states now over 80 per cent of all employees have had high school training. Men so trained can think things out for themselves, if given the facts upon which to base their conclusions.



For measuring syrups and similar materials flowing into cooking kettles, the meters and connecting pipe lines placed behind the kettles and close to the wall are well out of the way yet in full sight of the operator. The meter itself is at a convenient height for the operator when mounted on a level with the top of the cooking kettle. An intervening space between the meter installation and the outer walls of the building reduces likelihood of lines and meter becoming too cool during winter for best performance.

METERING *Makes Money*

Under properly chosen conditions mechanical metering has shown worth-while savings in raw material costs and non-productive manual labor. Convenience and quickness with which measuring operations can be carried out by meters are additional advantages.

By WILLIAM G. WOLF

Food Plant Superintendent, Chicago, Ill.

AUTOMATIC MEASUREMENT or metering of liquid foods and liquid ingredients used in food manufacture should be more widely studied and better understood by food production executives than it has been in the past. As recently as three years ago food plant men as a class did not even know that there was a meter made which would handle liquid food materials of more viscous character than water or milk. To get that information I had to canvass the meter manufacturing industry with a form letter to determine if such a meter was available and from whom.

Results of this inquiry led to a preliminary installation of two meters about two years ago to handle invert or heavy sugar syrup in a confection and flavoring syrup plant in which I have the responsibility of production operations and processes.

Although these meters were installed on an experimental basis they have, to date, justified their installation and use. In less than nine months they repaid their purchase and installation cost. However, such results are not likely to be duplicated in every instance where metering might be attempted.

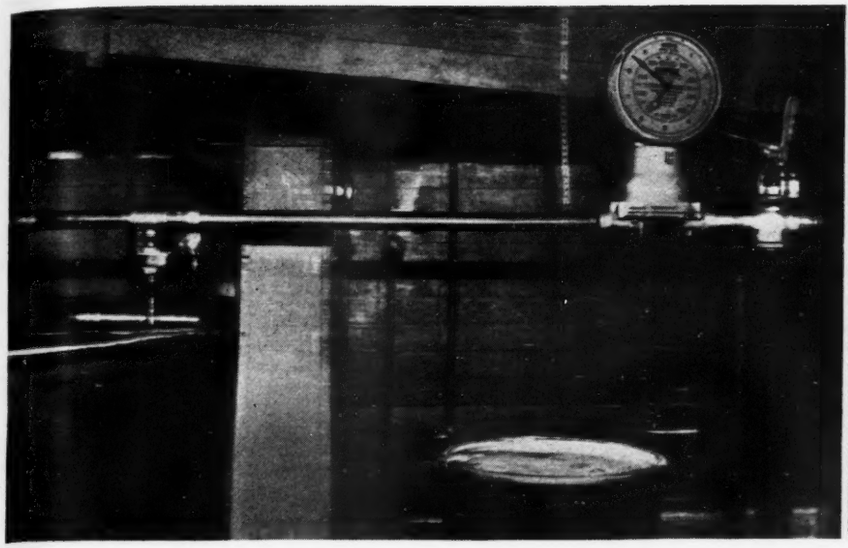
Consideration of installation of metering facilities should take into account several factors: (1) the amount of the liquid ingredient or finished product that will be handled over a shift or work-day period as well as over a year; (2) the amount of manual labor that such metering replaces; (3) the physical properties, such as specific gravity, consistency, viscosity and sensitivity to temperature changes of the material handled; and (4) the amount of auxiliary equipment required. By auxiliary equipment is meant holding tanks, pumps, automatic cut-out switches and valves, heating units, piping, and sanitary connections to aid in draining and cleaning the meters, pumps, and pipe lines.

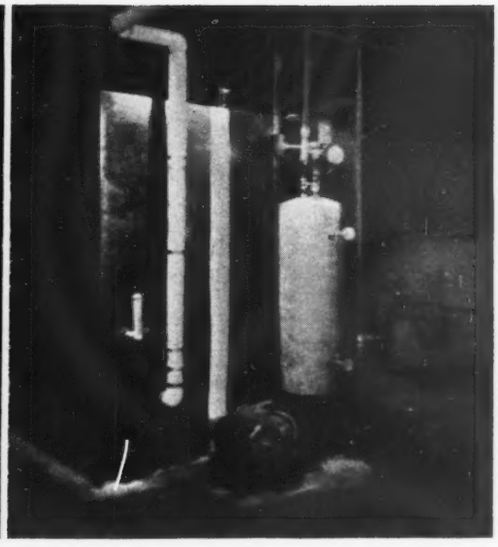
The contrasting manner in which these determining factors can be evaluated is illustrated by two typical cases. In one case, a manufacturer in New York City had the possibility of buying his annual requirement of 250,000 lb. of invert sugar in tank truck lots at a saving of $0.0028 per lb. over the cost of the same tonnage purchased in drum lots, a gross saving of $700 per year on this purchase cost alone.

Although the tank truck was fitted with a pump, the problem was to transfer the syrup to a tank 327 ft. distant from point of tank discharge and thereafter measure the syrup as used. The entire cost of the installation, including pipe lines, tanks, meters, valves, and cut-out equipment amounted to a few dollars less than $1,200, ready to run.

Total gross savings over a year of operation reached slightly more than $1,500 including the saving of 1,776 man-hours of manual labor at $0.46 per hour. As a result, the savings in one year netted approximately $300 because to date there has been no necessity for any maintenance or repair work of any kind and because frequent metering tests have shown the meters to be accurate to within ½ of 1 per cent.

In the other case, a concern in Chicago handling the same type of





LEFT: *In general applications, the meter may be inserted into the pipeline at any convenient point between point of supply and point of use, as long as the meter does not drain and is protected against damage by bumping or weather changes.* RIGHT: *When pump pressure is used to move the liquids from point of supply to point of use, delivery of 20 gal. per minute is obtained with a 2-in. rotary pump driven by a 3 h.p. motor at 200 r.p.m. with a pressure of 25 to 30 lb. per sq.in. on the line for vegetable oil and at 247 r.p.m. with a pressure of 50 to 60 lb. per sq.in. for invert syrup.*

syrup had to receive the syrup in drums. Hence there could be no savings by making purchases in tank truck lots. The cost of auxiliary equipment in this case was that for a 1,200 gal. storage tank, pump, pipe lines, and a meter. It totaled $540, with installation ready to operate. This installation cost included considerable incidental expense occasioned by experimental changes made on the meters before installation which had to be changed when the hook-up was made on a permanent basis.

During a year of operation this installation made possible a gross saving of a few cents over $507. Therefore, after one year of operation and experimentation the installation carried a net cost of about $33, installed and operating. During that year period, production was held up on three different occasions for replacement of worn gears in the gear train, and for removal of sediment from the meters which caused them to become inoperative. Also, after the meters had been in operation several months it became necessary to heat the syrup in the storage tank to a uniform temperature to reduce its viscosity and permit efficient handling, as well as avoid damage to the pump and meters. Heating was necessary because the storage tank was situated in an unheated portion of the plant.

Keeping the syrup at a temperature which will allow it to flow freely is important, because uniform specific gravity of the syrup is as essential to the accuracy of the meter as is uniformity of the pressure under which it drives through the meter. Observance of this precaution is imperative on account of the fact that metering is in reality a form of volume measuring and because the calibration of the meters becomes inaccurate as the rate of flow varies. With a uniform rate of flow, the slip factor of the meter is a constant. If the rate of flow changes, this slip factor changes and makes recalibration of the meter advisable. Because this slip factor is small it is likely to be too often overlooked.

Furthermore, wear and tear on both the pump and meter become practically negligible if the pressure and temperature at which the syrup is handled are maintained on a uniform and free flowing basis.

It is my opinion that automatic metering of liquid ingredients or finished products should not be attempted unless the operation of the system is in the hands of one of sufficient intelligence and experience to be held responsible for performance of duty. No matter how fool-proof an installation may be, there is always the human as well as the mechanical element that must be taken into account. Unless the individuals carrying on or supervising the various operations and machines are constantly on the alert and checking up on what is going on, there is always the possibility of slip-ups and of having something going wrong.

Automatic metering should not be attempted in every case where liquid materials are handled. First of all there should be sufficient recurrence

(*Turn to page 53*)

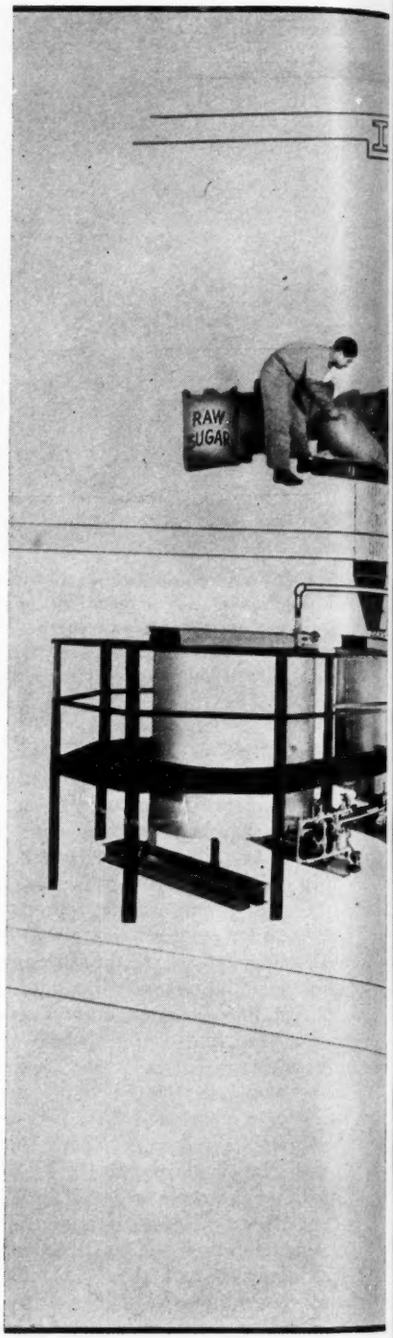
▶***Automatic measuring or metering is an engineering practice long known to various industries, particularly in the handling of such fluids as water, oil, and gas on a large volume basis. To a limited extent it has been used to measure ingredient water for bread making; an application in which it has been steadily gaining wider and wider use. Metering is also generally used as a means of gaging ale and beer. Its possibilities are worth looking into by producers and handlers of:***

Ale and beer	**Fats and oils**	**Molasses**
Bakery products	**Flavoring syrups**	**Salad dressings**
Carbonated beverages	**Fruit juices**	**Soups**
Confectionery	**Ice Cream mixes**	**Sugar syrups**
Cream	**Malt extracts**	**Wines**

Something NEW
In Sugar Supply

Food manufacturers promised savings by refining their own sugar requirements, using recently developed Sucro Unit.

By G. L. MONTGOMERY
Managing Editor, Food Industries



▶***Savings in raw material costs are of first importance to any food manufacturer. Hence, food plants that use as much as 10,000 lb. of sugar a day, the capacity of one of the new Sucro Units, may find it worth while to investigate this new refining method. These plants include:***

Ale Breweries
Bakeries, soft cake
Bakeries, biscuit and cookie
Beverage plants
Cane and Maple Syrup plants
Canning plants
Chocolate syrup plants
Confectionery plants
Flavoring syrup plants
Ice cream plants
Jam, jelly and preserve plants

SAVINGS in the cost of sugar are promised to food manufacturers who can make use of the Sucro Unit, a small semi-automatic sugar refining system developed by Applied Sugar Laboratories, Inc., 120 Wall St., New York, N. Y.

Raw sugar is the raw material used in this refining method, patented under U.S. Patent No. 1,989,156, Canadian Patent No. 372,269 and for which other patents are pending. By a simple series of operations, this raw sugar is converted into a clear white, sterile sugar syrup of 67½ Brix. This finished product is said to be of high purity, suitable for use in any food manufacturing plant that uses granulated sugar or refined sugar syrups, except where *dry* sugar is required.

The equipment used in this refining process consists of several tanks, pumps and a filter and can be accommodated in a floor space not exceeding 30 x 50 ft. In operation, a definite weight of raw sugar of a suitable grade is placed in a heated melting tank equipped with an agitator, together with a definite weight of water. This tank is heated by low pressure steam and the heating is continued until melting is completed, the agitator in the tank speeding up this operation.

While the resulting crude syrup is continuously agitated, first clarifying materials and then decolorizing materials are added according to a definite schedule. Agitation is continued until these additions are thoroughly mixed in the syrup. When required, filter medium is mixed with the syrup at this time.

Filtration is the next step in the process. The syrup, still in the melting tank, is brought to the correct temperature and then pumped through a filter press. The filtrate is a clear syrup, of the general color of the raw sugar used, but lighter in shade.

From the first filtration, the syrup is pumped over a cooler of the Baudelot type. This cools the syrup to a pre-determined temperature, suitable for the next step in processing.

Next, the syrup is pumped into a glass-lined tank, equipped with agitator and heater. Here, a decolorizing and sterilizing material is added in correct proportion and the syrup is agitated until this is thoroughly mixed in. Heating is then carried out until the syrup reaches the correct temperature for the second filtration.

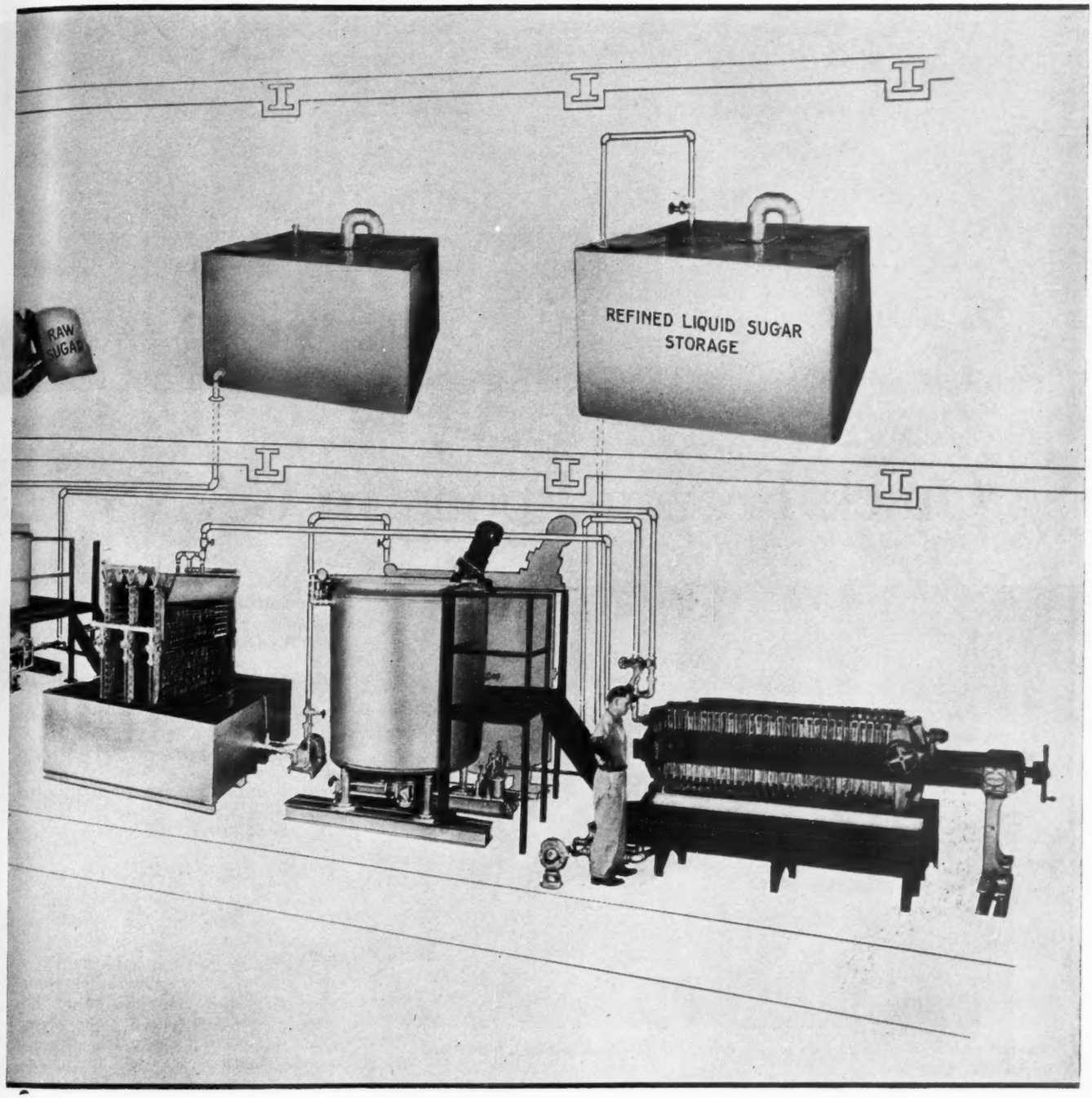
Filtrate from the second filtration is the finished, clear white, sterile syrup. It can be pumped directly to the processes in which it is to be used, or to a storage tank for later use.

Losses in this process are said to be at a minimum, the sugar content of the finished syrup representing 98 per cent of the weight of raw sugar solids

Cost Comparison for New York Area

Cost of granulated sugar at $4.55, less 2% is..		$4.46 per 100 lb.
Raw Sugar quotation per 100 lb.....	$3.00	
Additional cost for less than cargo lots and adjustment for higher polarization*	.15	
Approximate 2% loss in process	.07	
Clarifying and decolorization materials.....	.18	
Compensation	.10	
	$3.50	
Excise Tax.....	.535	
Total		$4.035
Thus, the savings in refining raw sugar against the granulated price would be.....		$.425 per 100 lb.
Against beet sugar or liquid sugar would be		$.245 per 100 lb.

* This premium of $.15 may vary somewhat.



The Sucro Unit shown here is said to produce 10,000 lb. of refined sugar in liquid form in eight hours. Equipment shown on the upper floor includes a raw sugar dump at the left, a sweet water tank in the center to collect the water used for washing the filters so that it can be reused in the melting tank, and a refined sugar syrup storage tank. On the lower floor, from left to right, are the melting tanks, cooler, treating tank and filter, together with pumps and other accessories.

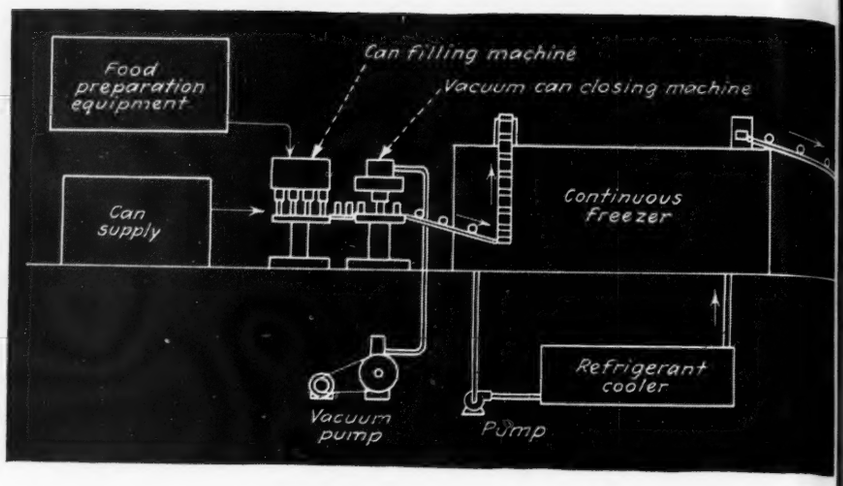
used. One step that keeps these losses low is the use of a sweet water tank (not to be confused with sweet, i.e., fresh, water cooling methods used in refrigeration), in which washings from the filters are stored to form part of the water used in the melting tank.

The man hours required to operate the Sucro Unit will vary according to the conditions in the individual plant, and in certain instances the man or men now employed in handling granulated sugar may be transferred to the operation of the unit. As the finished refined syrup will be pumped to the various cooking kettles where it is to be used, the time and labor formerly required to handle granulated sugar at the cooking kettles can be reduced or eliminated entirely. Where such conditions exist, it may not require more than 8 to 12 man hours to refine 10,000 lb. of raw sugar.

The materials used in the process may be had from the Applied Sugar Laboratories, Inc., whose chemists and engineers will assist with the installation.

The standard Sucro Unit has a capacity of 10,000 lb. of refined sugar in liquid form per eight hour day. It costs $9,800 delivered, except that for remote points a slightly higher charge is made. Cost of installation is low, consisting mostly of pipe fitting and electrical connections.

Compensation covering the use of the process is based upon 10c per 100 lbs. of raw sugar.

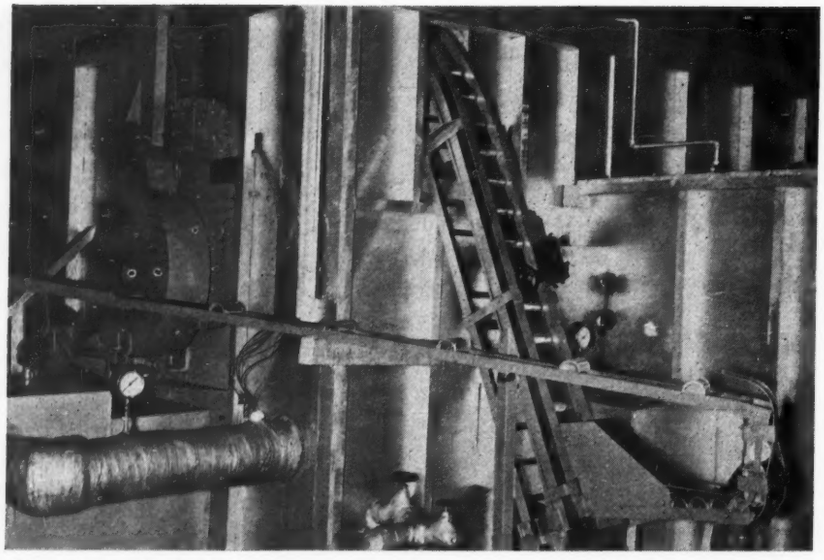


Schematic diagram showing sequence of operations in processing frozen food in cans

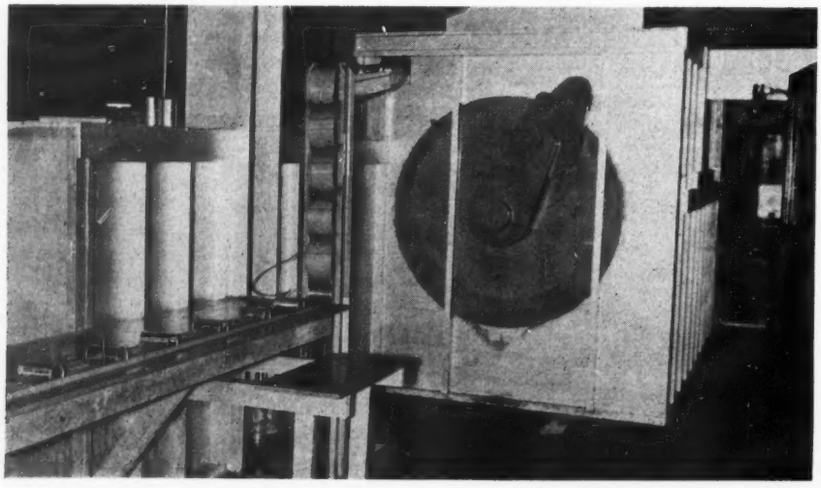
By JOSEPH M. ROUSH

President, Food Freezers, Inc.
San Francisco, Calif.

Quick Frozen Foods In CANS



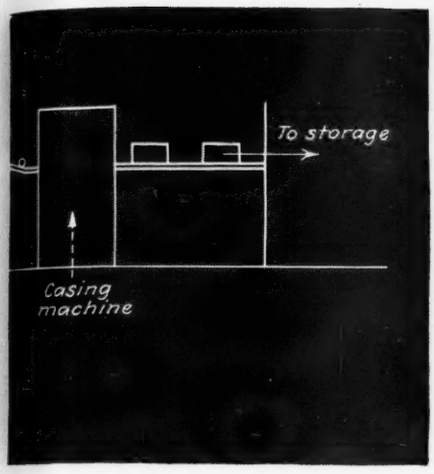
Receiving end of the continuous quick freezer, showing utilization of standard can-handling equipment

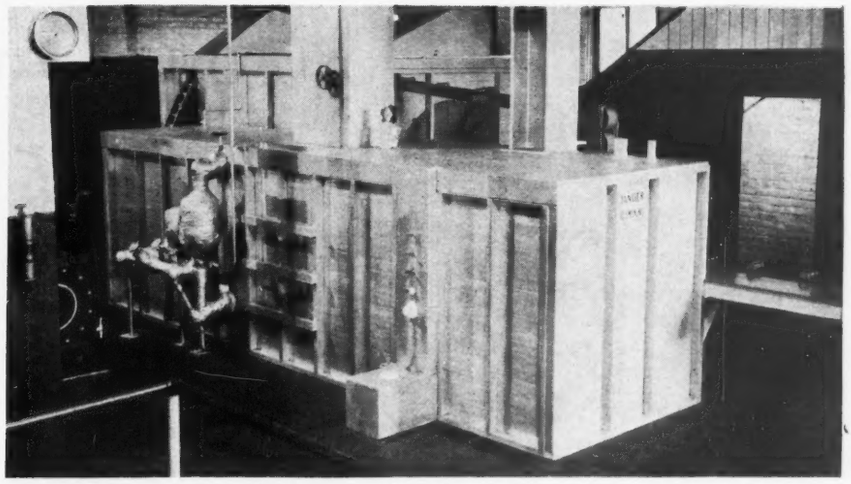


Discharge end of the freezer showing cans emerging from the conveyor

This new development applies the production line method of the cannery with its standard containers, continuous process, reduced labor costs, sanitation, and product control to the quick frozen food industry.

DEFINITE and rapid growth of the quick freezing business during the last few years has stimulated research aimed at solving the problems which have confronted this newest of the food industries. There has been a growing public appreciation of the fact that quick-frozen foods, carefully prepared and properly distributed reach the consumer in more nearly their natural state than by any other system of processing heretofore employed. Coupled with this has been the natural tendency to develop improved methods of preparation that will provide such advantages as: (1) preservation of all natural freshness; (2) adaptability to the equipment used in the modern standard cannery; (3) utilization of a sterilized tin container to be hermetically sealed with a vacuum closer,





Complete freezer. In the foreground is the cooler with the freezer behind it.

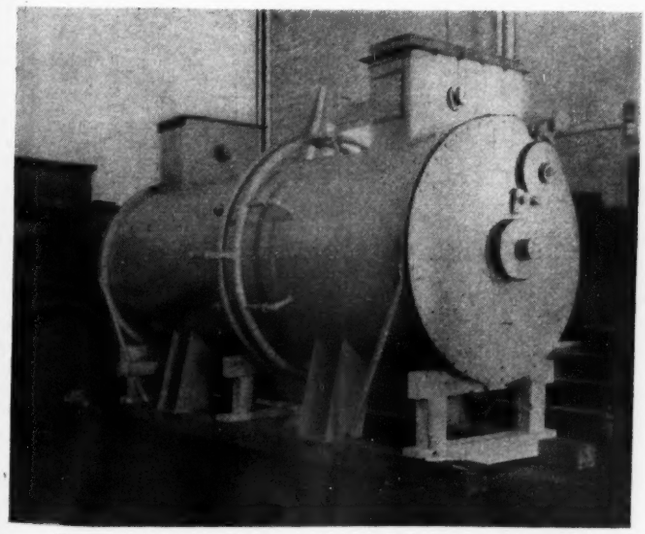
thus eliminating dehydration; (4) provision of an effective method of quick freezing through a continuous automatic process; (5) complete control and adjustment for the number of cans per minute or per hour and adjustment as to freezing temperature and time desired; (6) assurance of a process which answers all demands as to sanitation, reduced labor costs, lower power costs, compactness, proven design, simple construction and low maintenance costs; and (7) broadening the market for quick-frozen foods.

With these aims in mind and after many months of careful research work, Food Freezers, Inc., in conjunction with its affiliated companies, Food Machinery Corporation (Anderson-Barngrover Division) and Worthington Pump and Machinery Corporation (Carbondale Division) built a continuous quick-freezing test unit based on the Sorber patents, and installed it in the Battery Street plant of the National Ice and Cold Storage Company in San Francisco. Since July, 1938, Food Freezers, Inc., has conducted exhaustive tests with this machine on a wide variety of food products, assisted by the American Can Company through its Research and Manufacturing Departments and by the National Ice and Cold Storage Company. In addition, valuable assistance was received from Continental Can Company, the Bureau of Chemistry and Soils of the United States Department of Agriculture, the Bureau of Cannery Inspection of the California State Board of Health, and the agricultural engineering and dairy industry departments of the University of California.

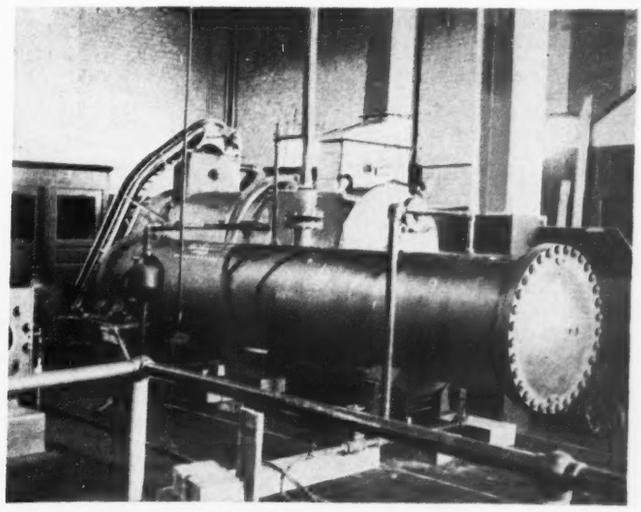
Fifty-nine different products have been packed in cans and quick-frozen in this unit. Fruit pulps packed included apricot, nectarine, plum, pear, avocado, persimmon, strawberry and youngberry; juices included orange, lemon and apple; dairy products included homogenized, pasteurized and evaporated milk, pasteurized cream, egg whites, egg yolks and whole eggs; vegetables included asparagus, lima beans, peas, string beans, broccoli, spinach and Brussels sprouts; fruits included strawberries, sliced pears, figs in syrup and sliced avocado; seafoods included oysters, shrimp, abalone, crab, and fillets of sole and rock cod. Chicken was also packed.

A number of these products were deliberately tested in order to obtain accurate data on freezer performance. Most important of all was to secure samples for laboratory testing as to quality and condition of the product. These tests were also designed to reveal the most economical operating conditions, the quantity of product which could be passed through the freezer and the cost of freezing food

(*Turn to page 54*)



Freezer before piping and insulation were installed



The shell and tube cooler prior to application of insulation

Do Your Own *Long-Range Weather Forecasting*

By L. V. BURTON
Editor, Food Industries

IN RESPONSE to a considerable number of requests, FOOD INDUSTRIES continues its annual review of the weather of 23 years ago. The purpose of republishing this old weather record is to enable those who are interested to test out the theory of the 23-year weather cycle. If this theory is correct, then the weather in 1939 will be a broad repetition of the type of weather that prevailed in 1916, and 1940 will resemble 1917. Thus everybody can be his own long-range forecaster—if he believes in the theory.

For several years FOOD INDUSTRIES has been following the 23-year old weather record and comparing it with current weather. It appears that the long range forecast is about 75 per cent correct. In 1915 the summer was cool and wet, a condition that was repeated in 1938. Also 1915 had a late autumn, another condition that was duplicated generally in 1938. But the blizzards of late November in 1938 had no counterpart in the records of 1915. Neither did the September hurricane in New England.

For food manufacturers, the greatest importance of weather centers in the growing and harvesting season. Abnormally large crop yields, as a result of unusually large rainfall, seem to explain a large number of the problems that now exist.

What can be anticipated in 1939, if the 23-year weather cycle is broadly repeated? Before answering this question a word of caution is highly desirable. It should never be inferred that the 23-year cycle theory predicts weather for a specific area. Quite the contrary. It merely suggests the general character of the weather, such as: a cold wet summer and a late fall; or excessive spring rains and a hot dry summer, or other such deviations from normal. It is only a broad picture of the weather pattern, as though viewed in the perspective of 23 years.

Weather To Be Expected in 1939

For the benefit of the literal minded, a brief characterization of the weather pattern to be anticipated east of the Rocky Mountains in the light of the cyclical theory is given. If the weather pattern of 1916 is repeated, here is what to expect in 1939:

Average winter conditions. Ample spring rains. A hot dry summer. An early fall with early killing frosts. **In short, an average year.**

For details of the old record see the following. Perhaps you can work out a better forecast for yourself.

THE WEATHER OF 1916

Prepared from U. S. Weather Bureau records

JANUARY: Not much snow. Generally warm east of the Great Plains and in Southwest; cool in Northwest. Precipitation heavy on Pacific Coast and in central and lower Ohio and Mississippi valleys; light falls west of Great Plains.

FEBRUARY: Warm to west of Great Plains and cool in most of East. Precipitation very light in Rocky Mountains and Great Plains; heavy falls in extreme Northwest and Northeast.

MARCH: Warm from Mississippi valley westward; cool in East. Precipitation generally moderate, except heavy on north Pacific coast and light in Great Plains and Rocky Mountains.

APRIL: Warm west of Rockies, in Great Lakes, Northeast and Southeast; cool elsewhere. Locally heavy precipitation in Texas and adjoining sections to Northeast, the north Pacific Coast, and parts of the Northeast.

MAY: Warm in Southeast, but cool in Northwest. Rainfall spotted; heavy in lower Mississippi valley and locally elsewhere; not much rain in Southwest. Floods in Mississippi River April to June.

JUNE: Generally cool, except the Southwest and parts to the Southeast. Rainfall spotted; heavy in lower Great Plains and moderate from Great Plains eastward.

JULY: Warm in Central, cool elsewhere. Rainfall excessively heavy in Southeast, light in Central. Record-breaking heat in interior. Severe drought Kansas, Oklahoma, Missouri and adjacent sections. Severe floods Southeast.

AUGUST: Warm east of Great Plains, cool west. Rainfall spotted. Continuously hot in interior first half. Unusually dry in Oklahoma, Kansas, Iowa, and adjacent sections.

SEPTEMBER: Temperatures variable, probably averaged normal for country. Rainfall spotted; light falls in much of West and locally in Southeast.

OCTOBER: Mild east of Great Plains; cool west. Rainfall generally light, except locally heavy in South-Central areas and in Southeast. Killing frosts south to Texas and Oklahoma, parts of Alabama and Mississippi.

NOVEMBER: Warm east of Rocky Mountains; cool west. Rainfall generally light, except in Southeast and Northwest. Dry weather unfavorable in South and parts West. Cold weather damaging in Mississippi, Louisiana and practically all Southern states.

DECEMBER: Warm in South and Southeast; cold elsewhere. Moderate to heavy rains east of Mississippi River and in extreme West; otherwise generally light. Dry, cold weather unfavorable.

SUMMARY: First part of year warm in West, but cool in East; last part reversed. Rainfall spotted all year, except for heavy falls in Southeast and Central valleys. Floods in Mississippi River in April-June. Hot, dry weather unfavorable for crops in July-August in interior of country.

Weather To Be Expected in 1940

Once again, *if* the weather pattern of 1917 is to be repeated in 1940, this is the sort of year we should expect:

Severe cold in winter extending far south; an ordinary sort of spring; a cool summer that is a trifle shy on rainfall; an autumn that has killing frosts earlier than usual. Then comes the severe winter. (Who will ever forget the winter of 1917-18?)

In short—the crop growing season will be a bit unfavorable.

If you want to prepare your own long range forecast, here is the record of 1917 compiled from official records.

THE WEATHER OF 1917

Prepared from U. S. Weather Bureau records

JANUARY: Heavy rainfall from the Ohio River southward to the Gulf, but generally light elsewhere. Severe cold weather in more Western States, abnormally warm east of the Rocky Mountains until near close of month when one of the severest cold waves of record overspread the country.

FEBRUARY: January cold wave intensified first few days, especially in Southeast, with temperatures down to 13 deg. northern Florida and freezing weather to extreme southern portion of that state. All winter truck killed in Southeastern States. Lowest temperature for month 51 deg. below zero in Nebraska. The month as a whole was colder than normal over most of the country; light precipitation, except heavy in east Gulf area.

MARCH: Warm in South but below-normal temperatures in North and West. Rainfall quite similar to February.

APRIL: Colder than normal, except in Southeast; well-distributed and mostly ample rainfall eastern half but spotted and generally light in western half of country.

MAY: Abnormally cold all sections. Rainfall spotted but mostly ample with heavy falls in much of interior.

JUNE: Warmer than normal in Southern and Southwestern States but subnormal temperatures elsewhere. Heavy rainfall in Northeast and parts of interior valleys but light western half of country.

JULY: Subnormal temperatures in Eastern half but abnormally warm in Western States. Rainfall generally light, except heavy in the Southeastern quarter of country.

AUGUST: Mostly seasonal temperatures. Rainfall light to moderate except parts of Southeast and lower Great Plains where it was heavy.

SEPTEMBER: Generally warmer than normal in the Western half and subnormal temperatures in East. Rainfall spotted, mostly light to moderate but heavy in Southeastern States. Severe tropical hurricane passed inland over southern Alabama on 28th.

OCTOBER: Abnormally cold in Eastern two-thirds but warmer than normal in the more Western States. Rainfall generally light except heavy in much of Northeast. Large areas of the West had no rainfall. Freeze in Southern States did considerable damage to crops.

NOVEMBER: Warm and dry except below normal temperatures east of Mississippi River.

DECEMBER: Extremely heavy rainfall in north Pacific area, more than 20 in. some localities, but below normal in most other sections. Abnormally warm west of Rocky Mountains but extremely cold in Eastern two-thirds of country. Lowest temperature 45 deg. below zero in South Dakota.

SUMMARY: *The year as a whole was relatively cold and dry,* except temperatures were slightly above normal in the Southwest and Pacific States. All states had below normal rainfall, except Maine, Kentucky, Tennessee, Mississippi, Idaho and eastern Washington. The relatively driest states were Texas and North Dakota with 53 and 62 per cent of normal respectively.

How to Obtain

The Right Food Color

By B. I. MASUROVSKY
Certified Laboratories, New York, N. Y.

"WE eat a great deal with our eyes," is an expression often repeated among food connoisseurs. What does this statement imply? Simply that before tasting food, we survey it with our eyes for general appearance and color appeal. The taste appeal of foods is therefore associated with eye appeal. The saying "it makes the mouth water," expresses the very thing experienced, when the mere sight of food stimulates the salivary glands. Doubtless this eye appeal depends in good part upon the appeal of the color of the food by association through our sense of sight to our memory. Hence, to gain this eye appeal the color of a given food must be normal and right.

This idea is illustrated by a recent campaign of the butter industry, aimed to explain to consumers the variations in butter color with the seasons, and to emphasize the superior nutritional value of the highly colored butter naturally produced in summer. Advertising copy was prepared, as shown in the illustration, to set forth the effect of summer conditions, overcome consumer prejudice against high colored butter, and create a demand for such butter.

Another example of color preference in foods is the demand for a highly colored cream line in bottled milk. Milk from Jersey and Guernsey cows has cream of a rich yellow color while the cream from Holstein and Ayrshire cows' milk lacks pigmentation. Guernsey milk sells at a premium, while Holstein milk is the general market milk.

Association of color with vitamin content is another example of the importance of food color. Carotene is a natural color, found in many foods rich in vitamins.

Color is also associated with flavor, as in the case of cocoa beans. In selecting cocoa beans for flavor, in general the lightest color is a guide to the finest flavor, while the darkest in color is often the poorest in flavor.

Color, therefore, is a sort of yardstick in the selection and judging of foods. The food industries will greatly benefit by paying attention to the subject of color in foods.

Many foods carry their own color, for example, fresh fruits and vegetables. In contrast, many food preparations must be artificially colored to produce the desired effect, for example, gelatine desserts. These gelatine preparations consist of gelatine, fruit acid, fruit flavor and certified food color. Suppose the color were to be omitted, what then would the finished dessert look like? Strawberry, orange, pineapple, mint, cherry and other flavors would all be more or less alike. The food would not be appealing to the eye, as it is when properly colored. Or suppose, through an error in manufacturing, strawberry flavor was colored green and mint flavor colored red. Confusion would result in the tasting of these products. It is evident that great care must be taken to harmonize the color with the flavor, in order that the finished product may have its full appeal to the consumer.

Artificial food coloring is practiced with the following foods: butter, cheese, ice cream, gelatine desserts, candy, crackers, imitation jams and jellies, and others. The importance of controlling the artificial coloring of such products can be appreciated when the possibilities of coloring to conceal inferiority are considered. Therefore, the Food, Drug and Cosmetic Administration requires not only that the purity of food colors must be tested, but also that color shall not be used

(*Turn to page 55*)

NATURAL
COLOR
Have you noticed these days that your milk and cream have a Rich Golden Color? Nature gives it that color.
• The SUN is shining
• The GRASS is growing
• The COWS are going outdoors for their meals
• The CREAM they give these days is Rich Golden in Color
• All BUTTER is made from Cream.
Therefore The BUTTER Has The Rich GOLDEN COLOR, Too!
As a matter of fact, it's the most nutritious BUTTER of the year and contains many more vitamins that are passed on...
From the SUN - To the GRASS - To the COWS - To the CREAM - To the BUTTER
BUTTER

Poster used to obtain consumer acceptance for the highly colored butter made from summer cream.

How FUMIGATION Affects Popping Quality of CORN

By
H. D. YOUNG,
R. T. COTTON
and
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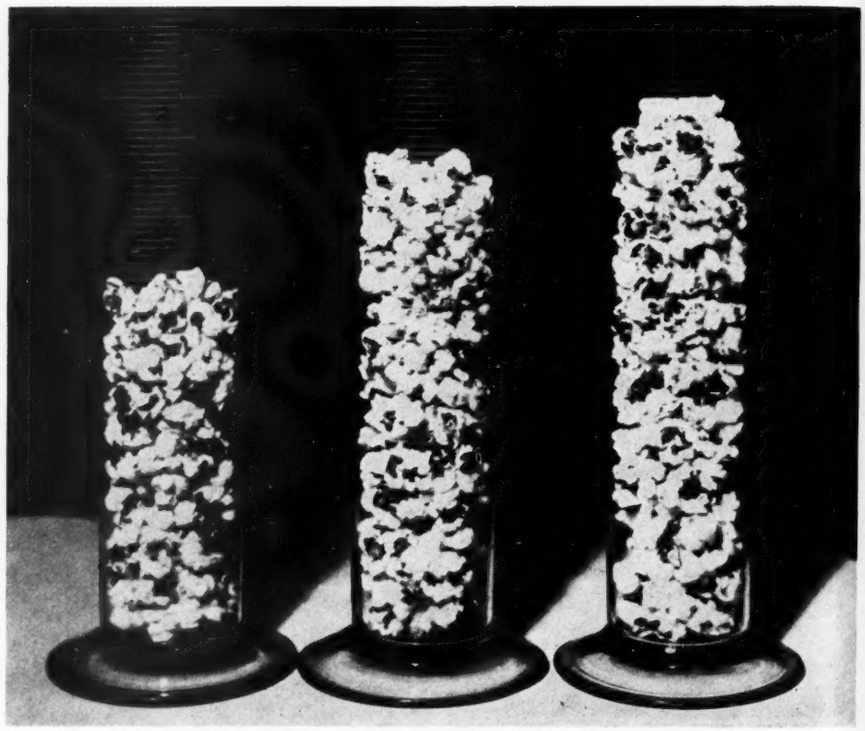
Bureau of Entomology and Plant Quarantine
United States Department of Agriculture



Variation in volume of 50 cc. samples of corn after popping. Middle sample is untreated. Sample at left fumigated with overdose of carbon disulphide. Sample at right fumigated with hydrocyanic acid.

CORN used for popping purposes frequently becomes infested with insects. This is particularly true in the South, where insects fly to the fields and start infestation in the ripening grain. As a safeguard against losses, newly harvested corn is usually fumigated to destroy this small field infestation before it can develop to disastrous proportions.

The writers were recently called upon to recommend a fumigant that would not injure the popping quality of the corn. As there seemed to be no published information on this point a few experiments were conducted to determine what effect, if any, the vapors of our common fumigants had on the popping quality of corn.

Samples from the same lot of popcorn were fumigated for 24 hours with carbon disulphide, ethylene dichloride, carbon tetrachloride, ethylene oxide, chloropicrin, and hydrocyanic acid. Dosages that would normally be used as well as excessively heavy ones were tried. A 50 cc. sample of corn was taken from each fumigated lot immediately after the 24 hour exposure and popped in an electric popper. The volume of the popped corn was then measured and compared with that of a similar sample of unfumigated corn that had been popped. To insure uniformity, the same popper was used for all samples, and it was cold at the start of each test.

Since all fumigants were found to have some effect upon the popping quality of the corn, tests were conducted at regular intervals after the exposure to determine whether the effect was permanent or disappeared with aeration.

In the table will be found data relative to these tests.

The immediate effect upon the popping quality of popcorn of the vapors of the common fumigants is rather striking when excessive concentrations are used and in some cases with normal dosages. Fumigating the corn with hydrocyanic acid improved its popping quality at all dosages tried. A dosage of 5 lb. of hydrocyanic acid per 1,000 bu. caused an increase in volume due to popping of 7 per cent over normal.

(Turn to page 56)

Effect on the popping quality of corn of twenty-four hours exposure to vapors of various common fumigants

Fumigant	Dosage	Volume of popped corn after fumigation[1]			Difference due to fumigation, in reference to volume of popped unfumigated corn[2]		
	Lb./1,000 bu.	1 day cc.	10 days cc.	30 days cc.	1 day per cent	10 days per cent	30 days per cent
Unfumigated	0	610	.....	.....	.....	.....	.....
Carbon disulphide	30	610	.....	.....	0	.....	.....
	60	465	560	610	−24	−8	0
Ethylene dichloride	20	495	615	.....	−19	.....	.....
	30	500	605	.....	−18	.....	.....
	40	475	605	.....	−22	.....	.....
Carbon tetrachloride	30	560	575	605	− 8	−6	.....
	45	570	585	600	− 7	−4	−2
	60	515	555	615	−16	−9	.....
Ethylene oxide	2	595	.....	.....	− 2	.....	.....
	4	595	.....	.....	− 2	.....	.....
Chloropicrin	3	550	600	.....	−10	−2	.....
	6	545	605	.....	−11	.....	.....
Hydrocyanic acid	2½	635	615	.....	+ 4	.....	.....
	5	650	605	.....	+ 7	.....	.....

[1] Each volume is the average of eight 50 cc. samples.
[2] Percentages are figured to the next whole number. Where the difference is less than 1 per cent, no entry has been made since such differences are within the range of experimental error.

FROZEN FOODS DIRECTORY

1939 EDITION

Rapid Growth Continues In Frozen Food Industry

Production of frozen foods continues to climb rapidly. The coming year will see a rise of about 31 per cent and an output of nearly 550,000,000 lb. by 117 companies reporting their packs to Food Industries. Allowing for the packs of companies not reporting production figures, the volume might go as high as 650,000,000 lb. During 1938, the pack, as reported by 117 companies, amounted to 419,322,000 lb.

There has been little change during the past year in the number of companies in the frozen food industry. There has been, however, a trend toward more quick frozen foods in consumer and institutional packages. Many companies have added new products to their lines, too.

The curve above is plotted from production figures reported to Food Industries. The percentage increase expected in 1939 is that for companies reporting for both 1938 and 1939. This percentage was applied to the reported 1938 pack to get the apparent 1939 pack.

PRESENTED BY FOOD INDUSTRIES . . . A McGRAW-HILL PUBLICATION

FROZEN FOODS DIRECTORY

(The companies included in this directory are those engaged in packing frozen food, with one or two exceptions which are indicated by footnotes. Honor Brand Frosted Foods Corp. is listed because of the volume which it handles, although it does no freezing. Z Pack Corp., likewise, is included.)

Company	Freezing plant location	Brand	Products	Containers	System	1937 output (lb.)	1938 output (lb.)	Intended 1939 output (lb.)
Mrs. H. J. Aase Gilbert, Minn.	Virginia, Minn.	Bec-i-Dee	Raspberries, strawberries	2 and 5 lb. Sealright cartons; 2½ lb. cans lined with waxed paper; 70 lb. wooden tubs	Air blast	1,000	2,500	4,000
Alton Canning Co., Inc. Alton, N. Y.			Cherries				400,000	
American Fish Co 19 Fish Pier, Boston, Mass.	Boston, Mass.	U. S	Haddock; cod, pollock and perch fillets; H. & G. whiting.	Wooden boxes (15 lb.)	Sharp freezer	2,000,000	2,000,000	2,000,000
Apple Growers Assn Hood River, Ore.	Portland, Ore.	Hood River, Flawless, Diamond.	Strawberries	Tins (30 lb.); barrels (50 gal.)	Sharp freezer	290,000	60,000	60,000
Armour & Co Union Stock Yards, Chicago, Ill.	Des Moines, Ia.	Cloverbloom	Table-dressed poultry: fryers, roasters, fowl, ducklings, turkeys.	Transparent-cellulose wrapped, 6 birds packed to each wooden box	Sharp freezer			
The Atlantic Coast Fisheries Co. 111 John St., New York, N. Y. 4 Fish Pier, Boston, Mass.	Provincetown and Boston, Mass.; New York, N. Y.	Nordic, Frigidsea, Atco, Atlanco.	Frozen fish and seafood of all varieties — principally cod, haddock, red perch and whiting fillets; dressed whiting, shrimp, scallops and many other varieties of round frozen fish	For frozen fillets, 1 lb. printed cartons, plain transparent-cellulose wrapper. Printed wrappers packed 5 lb. net, also 10 lb. cartons; parchment wrappers in 15 lb. shook boxes or corrugated cartons. For shrimp, 5 and 10 lb. in sulphite cartons	Regular sharp freezer and Cooke process	7,500,000	9,000,000	More than 10,000,000
Atlantic Quick Freeze Co New Bedford, Mass.		Atlantic	Fish fillets and seafood	Cartons (¾, 1, 5 lb.); transparent-cellulose wrapping	Z process	(Output included in that of Z Pack Corp.)		
B. & M. Frosted Foods Ossining, N. Y.		Honor	Meats (quick frozen for Honor Brand)	(See Honor Brand Frosted Foods Corp.)	Plate system, direct contact			
Barnes & Fisher Sodus, N. Y.	Wallington, N. Y.		Montmorency cherries, cherry juice, strawberries, prunes	Cans, barrels	Air blast	830,000	1,000,000	1,500,000
Batchelder & Snyder Co., Inc. 47 Blackstone St., Boston, Mass.	Boston, Mass.	Birds Eye, Snyder-Grade, Ocean-Supreme	Meats		Birds Eye	2,000,000	(Output included in that of Frosted Foods Sales Corp.)	
H. C. Baxter & Bro Brunswick, Me.	Corinna, Me.	Birds Eye	Peas, beans, corn, blueberries	(See Frosted Foods Sales Corp.)	Birds Eye	(Output included in that of Frosted Food Sales Corp.)		
H. B. Biggar Fruitland, Ont., Canada			Cherries					
Blue Lake Producers Co-operative P. O. Box 574, Salem, Ore. (Took over Hillman Packing Co.)	Salem, Ore.		Strawberries, loganberries	Tins (30 lb.); barrels (50 gal.)	Sharp freezer	30,000	21,000	
R. D. Bodle & Co 71 Spring St., Seattle, Wash.	Seattle, Marysville, Lynden, Winslow, Wash.; Portland, Banks, Ore.	Bodle's, Totem, Hyak, buyer's brands	Asparagus, peas, carrots and peas, cauliflower, cut corn, broccoli, green beans, lima beans, wax beans, spinach, corn on cob; strawberries, raspberries, blackberries, black raspberries, gooseberries, youngberries, loganberries, huckleberries, peaches, purple plums, prunes, sweet cherries, sour cherries, currants, apricots, rhubarb	Vegetables: flat, transparent-cellulose lined cartons (12 oz., 2½, 5 lb.); tins (5, 10 lb.) Fruits: Sealright transparent-cellulose lined cups (12 oz., 1 lb.); flat transparent cellulose-lined cartons (2½, 5, 10 lb.); tins, (5, 10, 15, 30 lb.); barrels (30, 50 gal.)	Various methods used	12,000,000	12,750,000	13,000,000
Booth Fisheries Corp., "Tastyloin Division" 309 West Jackson Blvd., Chicago, Ill.	Boston, Mass.; Buffalo, N. Y., Chicago, Ill.; Seattle, Wash.	Booth Tastyloins, Booth Seafoods (also private brands if required)	All fish and seafoods, both fresh-water and salt-water, including: haddock, ocean perch, grey sole, flounder sole, swordfish, halibut, green shrimp, cooked, peeled and cleaned shrimp, cape scallops, crabmeat, lobster meat, oysters, clams, lake perch, blue pike, yellow pike, sauger pike, whitefish and salmon	11 and 14 oz., and 1 lb. consumer sizes; 5 lb. institutional size. All merchandise wrapped in transparent cellulose	Cooke multiple-plate freezer			
Booth Fisheries Corp 309 West Jackson Blvd., Chicago, Ill.	At all Booth branches on the Atlantic, the Pacific, the Great Lakes and Canadian lake territory	Red Diamond, Bofisco, and Seatang	All fish and seafoods of every kind and description	All sizes of packages from 10 lb. up; also loose or bulk packages frozen singly	Hendron plate freezer, Colby freezer, air blast freezer, immersion process and sharp freezing			
Borden Dairy Delivery Co Fresno, Calif. (Freezes for own use)			Peach purée, boysenberry sauce, nectarines. (Experimenting with figs, grapes, boysenberries, strawberries, plums, apricots, cranberries, apples)		Frozen in room at —10 to —15 deg. under cold blast of air	160,000	800,000	
Boston Fish Co 18 Fish Pier, Boston, Mass.	Boston, Mass.	None	Fillets: haddock, cod, pollock, hake; mackerel, swordfish, scallops	Wooden boxes (15, 100, 150 lb.)	Air blast	100,000	50,000 to 75,000	50,000 to 75,000
Bozeman Canning Co Mount Vernon, Wash.	Monroe, Wash.	Frigifoods	Peas, peas and carrots, cut corn, corn on the cob, cut green beans, whole green beans, French cut green beans, asparagus, broccoli, cauliflower and spinach	2½ and 5 lb. waxed fiber cans, and two-piece boxes, tray wrapped with transparent cellulose, over-	Air blast	2,000,000	2,000,000	2,000,000

18 Fish Pier, Boston, Mass.			mackerel, swordfish, scallops	lb.)		100,000	50,000 to 75,000	50,000 to 75,000

Bozeman Canning Co., Mount Vernon, Wash.	Monroe, Wash.	Frigifoods	Peas, peas and carrots, cut corn, corn on the cob, cut green beans, whole green beans, French cut green beans, asparagus, broccoli, cauliflower and spinach	2½ and 5 lb. waxed fiber cans, and two-piece boxes, tray wrapped with transparent cellulose, overwrapped with waxed paper for 2½, and 2 lb., 12 and 10 oz.	Air blast	2,000,000	2,000,000	2,000,000
Broder Canning Co., New Westminster, B. C., Canada			Strawberries					
Brown Packing Co., Christian and Howard Sts., Philadelphia, Pa.	Operations start in Florida and move with seasons to various parts of country	Brown's Select	Apricots, sliced apples, blueberries, blackberries, RSP cherries, loganberries, peaches (yellow, white), pineapple (crushed, diced), plums, pumpkin, raspberries (red, black, seedless), rhubarb, stawberries, currants, pineapple, tangerine, cranberry puree, string beans, caulifiower, peas, lima beans, waxed beans, corn, broccoli, brussels sprouts, spinach, carrots and peas, corn on cob, glazed fruits, nuts, maraschino cherries, mincemeat, lemon juice, orange juice, tomato juice	Cartons (10, 12 and 16 oz.); cans (2½, 5, 10, 15 and 30 lb.); kegs (10 and 30 gal.); barrels (50 gal.)	Air blast at subzero temperature blows on product as it rolls down incline. Products quick frozen loose then packaged	30,000,000	35,000,000	25,000,000 to 35,000,000
Howard T. Burge Co., 1807 E. Olympic Blvd., Los Angeles, Calif.	Los Angeles, Calif.	Various brands	Youngberries, boysenberries	Cartons and wooden boxes (30 lb.)	Air blast	300,000		
Butler Canning Co., 1902–1920 Center St., Tacoma, Wash.			Fruit	Barrels				
California Consumers Corp., P. O. Box 1336, Arcade Annex, Los Angeles, Calif.	Pasadena and Los Angeles Calif.	Citrus juices: Truius, Pure Froz-n, Calif. Froz-n. Fruits: Tru Froz-n. Vegetables: Prime Froz-n	Citrus juices, fruits and vegetables	Cans for citrus products (12, 30 and 96 oz., vacuum sealed); boxes for berries (30 lb.); cartons for vegetables (1 to 5 lb.)	Finnegan tubes with alcohol brine at −35° F. and tunnel freezing at Pasadena; shelf freezers, with or without air blast, at Los Angeles	Citrus juices, 3,600,000; poultry, fish, meats, 3,200,000 lb.	Citrus juices, 3,600,000; poultry, fish, meats, 3,200,000 lb.; asparagus,500,000; lima beans, 500,000	
California Frosted Foods, Inc., 800 S. Commerce St., Stockton, Calif.	Stockton, Calif.	Calameda	Peas, string beans, asparagus, lima beans, broccoli, cauliflower, brussels sprouts, spinach, artichokes, zucchini, squash, summer squash, carrots and peas, corn, figs, apricots, nectarines, peaches, cherries, melons, blackberries, youngberries, raspberries, and strawberries	Waxed paperboard, two-piece carton (12 oz., 1, 2½ and 5 lb.); bottom wrapped in transparent cellulose, whole carton in printed waxed paper. Tins (No. 2, No. 10 and 30 lb.)	Air blast	300,000	1,289,000	2,400,000
California Packing Corp., 101 California, San Francisco, Calif. (Freezing experimentally for Frosted Foods Sales Corp.)	Sacramento, San Jose, Calif.	Birds Eye	Peas, asparagus, freestone peaches and an experimental pack ot pineapple	Cartons (14 oz., 1, 2½ and 5 lb.)	Birds Eye		Begun operations	
Canadian Frosted Foods, Ltd., P. O. Box 543, Whitby, Ont., Canada	Toronto	Del Glacio	Strawberries, raspberries, cherries, peaches, peas, asparagus	Cartons (1 and 2 lb.); cans and pails (5, 12, 22 lb.); flat packages (12 oz. and 2½ lb.)				
Cascade Frozen Foods, Inc., 6129 Arcade Bldg., Seattle, Wash.	Burlington, Wash.	Jack Frost	Peas, cut green beans, lima beans, corn on cob, cut corn, asparagus; peaches, raspberries, strawberries, youngberries	Cartons (12 oz., 2½ and 5 lb.)	Air blast		250,000	300,000
Cedarburg Canneries, Inc., Cedarburg, Wis.	Mequon, Wis.		Peas	Transparent-cellulose bags packed in waxed cartons (2½, 5 lb.)	Air blast	None	200,000	
Cedergreen Frozen Pack Corp., Wenatchee, Wash.		Aaron AAA and Cedergreen	Fruits, vegetables (products frozen for E. A. Aaron & Bros., Inc., Chicago, Ill.)	Consumer and institutional.				
Central Creameries, Ltd., Charlottetown, P. E. I., Canada		Kold Pak	Strawberries			11,000	15,000	20,000
Russell Champion & Sons, Kensington, P. E. I., Canada	Kensington, P. E. I.	Champion	Meats, poultry, fish, strawberries, raspberries, blueberries	Wood boxes for meats and fish; paper cartons for berries	Sharp freezer	154,000	200,000	
Cherry Growers Packing Co., 709–15 East Front St., Traverse City, Mich.	Traverse City, Mich.	Reddi Maid, Montmorency	Cherries, apples	Paper cups (1 lb.); tins (10, 15, 30 lb.); barrels	Air blast	6,344,600	3,041,000	
The Clyde Kraut Co., Clyde, Ohio.	Toledo, Ohio	None	Cherries	Tins (30, 50 lb.)		200,000	60,000	200,000
W. H. Copeland Co., Warrenton, Ore.	Warrenton, Ore.	Copeland	Peas, spinach, broccoli, green beans, salmon fillet and steaks, filleted sole	Consumer packages (12 oz.); institutional packages(2½, 5 lb.) (boxes wrapped in waxed paper)	Air blast in tunnel.	400,000	750,000	1,500,000
L. L. Coryell & Sons Co., Lincoln, Neb.		Coryell 70	Meat, poultry, fruits, vegetables					
Craddock & Craddock, Inc., Dyersburg, Tenn.	Dyersburg, Tenn.	Triple CCC, Craddock	Strawberries, youngberries, dewberries	Tins and barrels (10, 15, 20, 30 lb.)	Z process, mass frozen	4,500,000	2,000,000	5,000,000
T. W. Crocker Co., Ltd., Newcastle, N. B., Canada	Newcastle, N. B., Canada	C	Blueberries; salmon and smelts	Boxes (10, 15, 30, 100 and 200 lb.)	Air blast and immersion	445,000	405,000	
The Cudahy Packing Co., 221 N. LaSalle St., Chicago, Ill.	Omaha, Neb.; Sioux City, Iowa Falls, Ia.; Kansas City, Mo.; St. Paul, New Ulm, Minn.; other points	Puritan, Selected, A-Grade, Rex, Rival, Crown.	Beef, veal, pork, lamb, poultry	Cans, boxes, cartons, etc.	Sharp freezer and Z process	990,000 of poultry	2,400,000 of poultry, shrimp	
Curtice Brothers Co., 20 Curtice St., Rochester, N. Y.	Rochester, N. Y.	Blue Label	Peas, corn,green beans, wax beans, carrots, peas	Cartons (2½ and 5 lb.)	Z process	300,000	More than 300,000	
Daggett Chocolate Co., 408 Main St., Cambridge, Mass.	Norfolk, Va.		Strawberries (cold pack for own use and for local ice cream manufacturers on contract.)	Barrels	Sharp freezer	2,000 bbl.		1,000 bbl.

FROZEN FOODS DIRECTORY

Company	Freezing plant location	Brand	Products	Containers	System	1937 output (lb.)	1938 output (lb.)	Intended 1939 output (lb.)
Deerfield Packing Corp. Bridgeton, N. J.	Bridgeton, N. J.	Deerfield	Asparagus, peas, snap beans, lima beans, broccoli, cauliflower, cranberries, corn, brussels sprouts, spinach	Consumer and institutional packages	Birds Eye Frosters and Deerfield quick freezers	25,000,000	30,000,000	Probably more than in 1938
John H. Dulany & Son. Fruitland, Md.	Fruitland, Md.; Norfolk, Exmore, Va.		Strawberries, lima beans, stringless beans, broccoli, asparagus, peaches, peas	Cartons (1, 2½ and 5 lb.); cans (10, 30 lb.); barrels				
Eastern Shore Canning Co., Inc. Machipongo, Va.	Machipongo, Va.	Eastern Shore, Escco	Lima beans	Friction-top tin cans (5 lb.); paper cartons (1 and 2 lb.)	Air blast	150,000	50,000	200,000
Elberta Packing Co. Elberta, Mich.	Muskegon, Mich.		RSP cherries	Barrels (50 gal.); kegs (130 lb.); tins (30 lb.)	Air blast	1,448,310	104,580	
Emmett Ice Co., Inc. Emmett, Idaho	Emmett, Idaho	Circle E	Strawberries, youngberries, raspberries, apricots, cherries	Tulip cups	Sharp freezer			
Erb's Kadota Fig Gardens. Waterford, Calif.	Waterford, Calif.	Erb's	Figs	Cartons (12 oz.); tins (8 lb.)	Air blast	3,000	None	
Eugene Fruit Growers Assn. Eugene, Ore.	Eugene, Junction City, Ore.	Diamond	Cherries, berries	Barrels; tins (30 lb.)	"Do only a little freezing"			
Excelsior Creamery Co., Ltd. 926 E. First St., Santa Ana, Calif.	Santa Ana, Calif.		Pimentos, condensed skim milk (packed for own use). Distributes complete line of frozen foods	Tins (5 gal.)	Sharp freezer	Pimentos, 34,000; condensed skim milk, 120,000	Same as 1937	Same as 1937
The Exchange Orange Products Co. 616 East Grove St., Ontario, Calif.	Ontario, Calif.	Exchange	Lemon and orange juices	Cans [No. 5 and No. 12 (1 gal.) and 6 gal.]; 6-gal. cans are slip-cover type, others, sanitary cans	Reduce juice to slush in ice cream freezer; can and place at once in room at −20 deg. F.	Lemon juice, 180,612; orange juice, 566,614	Lemon juice, 145,838; orange juice, none	About same as in 1938
F. & M. Packing Co. Traverse City, Mich.	Traverse City, Mich.	None	RSP cherries	Barrels; cans (30 lb.)	Slow freezing	*1,000,000	None	Up to 2,000,000
Fairmont Canning Co. Fairmont, Minn.	Fairmont, Minn.	Crest (also freezes for buyers labels)	Peas, lima beans, cut corn, corn on cob	Paper cartons (12 oz., 2½, 5 and 10 lb.)	Air blast and belt	2,500,000	5,000,000	5,000,000
Marion T. Fannaly, Inc. Ponchatoula, La.	Ponchatoula, La.	Fannaly's	Strawberries, balckberries, figs, youngberries, blueberries; shrimp, soft-shell crabs, other seafoods	All sizes (from 1 lb. to barrels)	Sharp freezing and quick freezing equipment (tunnel with belt)	2,500,000	2,000,000	Anticipate larger pack than in 1938
Farm Bureau Fruit Products Co. 221 N. Cedar St., Lansing, Mich.	Muskegon and Benton Harbor, Mich.	Honest George, Great Lakes, Red Mitten	Strawberries, cherries, black raspberries, red raspberries, dewberries, grapes	Tins (6, 15, 30 lb.); cartons (1 lb.); barrels	Sharp freezer	1,300,000	75,000	1,500,000
Farmers Commission House. 403 W. 14th St., New York, N. Y.		F.C.H	Long Island ducks (ready to cook)	Wrapping of transparent cellulose	Z process	(Output included in that of Z Pack Corp.)		
Chas. Feller. Marshfield, Ore.	Marshfield, Ore.		Salmon, halibut, cod, bass, etc.	Boxes only	Direct expansion	350,000	150,000	
Florence Fish & Oyster Co. Florence, S. C.	Florence, S. C.		Seafoods	Fish, trays, 25 lb. each, ship loose; shrimp, 5 and 10 lb. shipments	Sharp freezer	8,000,000	1,000,000	1,000,000 or more
40 Fathom Fisheries. Boston, Mass.	Boston, Mass.	40 Fathom	Fish fillets	Wooden boxes and cartons (5, 10, 15, 20 lb.)	Formerly air blast; in future Birds Eye			
Freezerved Foods, Inc. National Standard Bldg., Houston, Tex.		Cer-Tex	Oysters, shrimp and other seafoods	Conical waxed-paper cartons				
Frigid Food Products. 1951 East Ferry, Detroit, Mich.	Missouri, Ohio, Michigan, New York.		Strawberries, raspberries, blueberries, cherries, loganberries; peas, lima beans, corn, asparagus, broccoli, spinach and other vegetables	For vegetables, 12 oz., 2½ and 5 lb.; for fruit, 1, 15 and 30 lb.	Temperature of −25 deg. F.	5,100,000		50 per cent increase
Frost Sealed Products, Inc. Sumner, Wash. (Freezes for Food Associates, Inc., Seattle and San Francisco)	Sumner, Wash.	Northwind, Frostkraft, Kwikway	Peas, cut corn, corn on cob. (In 1939 will also freeze strawberries, loganberries, raspberries, wild blackberries, rhubarb, peaches, peas and carrots, spinach, broccoli and green beans)	"Cello-wrap" cartons	Air blast	600,000	1,200,500	1,500,000
Frosted Foods Sales Corp. 250 Park Ave., New York, N. Y.	Portable freezers are moved to various parts of country with the seasons. Permanent installations at Boston, Mass.; Fort Wayne, Marion, Indianapolis, Ind.; Omaha, Neb.; Harlingen, Texas; Hillsboro, Ore.; Halifax, N. S.; Bridgeton, N. J.; Jacksonville, Fla.; Sayville, Mt. Morris, Medina, N. Y.; Exmore, Va.; Pontchatula, La.; Corinna, Me.	Birds Eye	Blueberries, raspberries, strawberries, youngberries, peaches, broccoli, cauliflower, green beans, wax beans, cut corn, lima beans, peas, peas and carrots, spinach, squash, asparagus, corn on cob, rhubarb, brussels sprouts; poultry: squab broilers, broilers, fryers, roasting chickens, ducklings, turkeys, fowl for fricassee; shellfish: crabmeat, shrimps, oysters, scallops, lobster meat; fish: red perch, codfish, haddock, halibut, salmon, mackerel and sole fillets, salmon and halibut steaks, swordfish, crabmeat, shrimp; beef roasts, beef steaks, lamb chops, lamb roasts, lamb for stew, pork chops, pork loin roasts, sausage links, chopped steak, calves liver. (Several of the above products are packed in various styles)	Cartons (10, 11, 12, 13, 14, 15, 16, 40 oz., 5 lb., for fruits and vegetables); transparent-cellulose wrapped poultry in stockinets (11 oz. to 17 lb.); cartons (10 to 12 oz. for shellfish; 1 to 5 lb. for fish; 5 to 6 lb. for beef steaks; 3 to 6 lb. for beef roasts, lamb chops, lamb roasts and pork roasts, ½ lb. for calves liver). (Products are wrapped in transparent cellulose and put into waxed cardboard cartons, and the cartons are wrapped in waxed paper. Strawberries and peaches are put first into vegetable parchment bags)	Frosted Foods Sales Corp. patented multiplate frosters, using flooded ammonia system. Packaged products placed between froster plates which are brought together by hydraulic pressure. Freezing done at average temperature of −28° F.	36,500,000 (Figure not official)	100,000,000 (Figure not official)	60 per cent increase over 1938

Frosted Fruit Products 200 Center St., Los Angeles, Calif	Los Angeles, Calif.		Apricots, boysenberries, blackberries, black raspberries, grapes, nectarines, plums, raspberries, strawberries, youngberries (all frozen as seedless purees)	Tins (1 gal., 30 lb.)	Air blast	None	101,700	300,000 to 500,000
Frostkraft Packing Corp. 185 Lombard St., San Francisco. Calif. (Freezes for Food Associates, San Francisco and Seattle) Inc.	San Francisco	Frostkraft	Peaches, apricots, figs, melons, grapes, string beans, brussels sprouts, cauliflower, broccoli, zucchini, Swiss chard, spinach, peas, lima beans, butter beans, artichoke hearts, artichoke bottoms, asparagus	Telescope type (12 oz., 2½, 5 lb.)	Air blast		750,000	2,000,000
Frozen Fruit Co. Mart Bldg., St. Louis, Mo.	Salem, Ore.; Puyallup and Seattle, Wash.; Provo, Utah; Twin Falls, Ida.; Hammond, La.; Cleveland, Tenn.; Geneva, N. Y.; Fairmont, Minn., St. Johns, N. F.	Frost-T-Foods	Strawberries, blackberries, raspberries, cherries, blue plums, youngberries, loganberries, blueberries, grapes, peaches, gooseberries, rhubarb, apricots, apples, peas, lima beans, cut corn, corn on cob, string beans, spinach, broccoli, asparagus, fruit juice	12 oz., 1, 2½ and 5 lb. packages; 10, 15 and 30 lb. tins	Several different systems			
Fruit Belt Preserving Co. East Williamson, N. Y.	East Williamson, N. Y.	Sea King	Cherries, peas	Tins (10, 15, 30 lb.) for cherries; cartons (2½ lb.) for peas	Zero room method.	305,000	170,000	
Fruit Growers Cooperative Sturgeon Bay, Wis.	Fruit Growers Coop. or private brand	Sturgeon Bay, Wis. Initial freezing done in Chicago and Minneapolis, also	RSP Cherries	Tins (16 and 30 lb.); barrels; half barrels	Sharp freezer	2,000,000	1,200,000	2,000,000
General Seafoods Corp. 1–15 Fish Pier, Boston, Mass.	Boston, Mass.	Seafresh; 40 Fathom	Fillets: haddock, perch, skinless (cod), sole (flounder), sole (genuine), catfish (ocean), silvering, mackerel, pollock, hake, halibut, salmon; steaks: swordfish, halibut, salmon, cod; pan dressed: perch (ocean), haddock; shellfish: scallops, clams, lobster meat, crabmeat, oysters, shrimp	Fish wrapped in transparent cellulose and put into 1, 5, 10 lb. waxed cartons; cartons are wrapped in waxed paper. Vegetables parchment wrapper used also for fish and fillets	Birds Eye	Output included in that of Frosted Foods Sales Corp.)		50 per cent increase over 1938
Genoa Fisheries, Inc. 250–252 Northern Ave., Boston, Mass.	Boston, Mass.	Genoa	Fillets: haddock, perch, pollock, sole, flounder, skinless cod, skinless hake; bone squid, sardines, whiting, H. & G. whiting, mackerel, sand eels, butterfish, porgies, skatewings, eels and shrimp	Boxes (10, 15 lb.)	Quick freezing at −35 to −40° F.	1,200,000	2,000,000	2,000,000
Gorton-Pew Fisheries Co., Ltd. 327 Main St., Gloucester, Mass.	Gloucester, Mass.	Gorton	Several varieties of fish	Cartons and boxes (5, 10, 15 lb.) Fillets wrapped in transparent cellulose. Oysters, clams and scallops in paraffined paper cups	Compression-contact system	9,000,000 to 10,000,000	10,000,000 to 12,000,000	10,000,000 to 12,000,000
Gresham Packing Co. Gresham, Ore.	Gresham, Ore.	None	Strawberries, raspberries, loganberries, boysenberries, youngberries, blackberries	Cups (1 lb.); cartons (12 oz., 2½, 5, 10 lb.); tins (10, 15, 30 lb.); barrels (30, 50 gal.)	Sharp freezer	1,500,000	1,500,000	1,500,000
Harold E. Hamblen, Inc. 479 First Ave., New York, N. Y.		Haven	Fish and seafoods — various kinds of fish fillets	Fillets individually wrapped in transparent cellulose and packed in 5 lb. cartons; scallops in 12, 16 oz. cups; oysters in 10 oz. cups	Z process	(Output included in that of Z Pack Corp.)		
Harvey & Co., Ltd. St. John's, Newfoundland	St. John's, Rose Blanche, Newfoundland	I-C-Kold, Birds Eye, Kiltie, Cutlass, Seafresh, Gorton-Pew	Blueberries, fish, smoked fish	Boxes (15, 30, 50, 100 lb.); packages (11 oz., 2½, 5, 10, 20 lb.	Sharp freezing; brine freezing; brine freezing at very low temperature by our own patent method; Birds Eye system under license	4,100,000	4,000,000	3,600,000
Havana Canning Co. Havana, Fla.	Jacksonville, Fla.	Le-Ko	Blackberries and blueberries	Barrels	Sharp freezing	52,355	610,000	500,000
L. G. Haviland & Sons Highland, N. Y.			Currants and raspberries (products usually packed on custom order)	Barrels	Sharp freezing			
Heeney Bros., Ltd. 406 Huron Ave., Ottawa, Ont., Canada	Toronto, Quebec, Gaspè	Zer-o-pak	Strawberries, raspberries, cherries, peaches, blueberries, peas, asparagus, spinach, beans (wax and green), lima beans, corn on the cob, cut corn, broccoli, brussels sprouts, cauliflower	Mono, Dixie and Sealright containers	Own system (combined air blast and direct contact)	180,000	250,000	500,000
Henry & Close, Inc. 20 Fish Pier, Boston, Mass.	Boston, Mass.	Eight Bells, Iceberg, Land-Ho, Igloo	Seafoods	Wooden boxes (15, 10 lb.)	Air blast	4,500,000	4,500,000	5,500,000
Holley Canning Co., Inc. Holley, N. Y.	Brockport and Morton, N. Y.		RSP cherries and sliced apples	Tins (10, 15, 30 lb.); barrels	Sharp freezer	920,000	900,000	900,000
E. B. Holton Webster, N. Y.	Webster, N. Y.	Holton	Sour cherries	Barrels; tins (50, 25, 15 lb.)			400,000	"Double if crop is good."
Honor Brand Frosted Foods Corp. 40 Harrison St., New York, N. Y. 980 Merchandise Mart, Chicago, Ill. (Does no freezing but is a major distributor)	Nebraska, New York, Delaware, California, Texas, Washington, Wisconsin, Indiana, Massachusetts	Honor	Squash, peas, red raspberries, spinach, sour cherries, string beans, wax beans, rhubarb, lima beans, apples, strawberries, asparagus, peas and carrots, corn on cob, cut corn, youngberries, brussels sprouts, cauliflower, juices, figs, broccoli, artichokes, apricots, sweet cherries, peaches, loganberries, melons, pineapple plums, poultry, fish, meats	Cartons (10, 12 oz., 2½, 5, 10, 15 and 30 lb.)	Combination of various methods (direct contact, belt, tunnel, etc.) Loose pack is distinguishing feature. Low temperatures & short time used			

FROZEN FOODS DIRECTORY

Company	Freezing plant location	Brand	Products	Containers	System	1937 output (lb.)	1938 output (lb.)	Intended 1939 output (lb.)
House of David Cold Storage Plant 1104 Broad St., St. Joseph, Mich.	Benton Harbor, St. Joseph, Mich.	.....	Strawberries, raspberries, corn on cob, cauliflower, spinach, cherries	Carton (1, 20 lb.); tins (30 lb.); barrels (50 gal.)	Air blast, low temperature	(Mostly experiment pack) Raspberries, cherries, 1,400,000		.....
Hubbell Squab Co. 550 University Ave., Los Gatos, Calif.	Los Gatos.....	Dr. Hubbell's Quick Frozen Choice Boned and Whole Squabs	Squabs.....	Mono pint tear-strip Kleen Kups	Immersion.....	6,500	9,000	10,000
Huber Packing Co. Olympia, Wash. (Freezes for Food Associates, Inc., Seattle and San Francisco)	Olympia, Wash.....	Kwikway.....	Berries, peaches, apricots.....	" Cello-wrap " cartons.....	Air blast.....	.....	.....	.....
Hudson River Fruit Exchange, Inc. Milton, N. Y.	Milton, N. Y.....	Hudsonia.....	Red currants, cherries, grape pulp, raspberries, quince juice, grape juice, currant juice and crabapple juice	Barrels.....	Sharp freezer, quick freezer	4,000,000	3,500,000	4,000,000
Island Cold Storage Charlottetown, P. E. I., Canada	.....	.....	Strawberries.....	.....	.....	.....	.....	.....
Jerpe Commission Co., Inc. Omaha, Neb.	Omaha, Neb.....	Diamond J.....	Poultry.....	Transparent cellulose; individual cartons	Birds Eye.....	1,250,000	3,000,000	.....
Jory Packing Co. Salem, Ore.	.....	Ever Fresh.....	Whole kernel corn, corn on cob.....	.....	.....	(Output included in that of Frosted Foods Sales Corp.)		
Kingan & Co. Indianapolis, Ind.	Indianapolis, Ind.....	Kingans Fresh Frosted Tasti-Foods	Meats (pork, beef).....	Cartons (1, 2 lb); boxes (5, 10, 30, 50 lb.)	Birds Eye.....	.....	.....	2,000,000
W. F. Kolbe & Co., Ltd. Port Dover, Ont., Canada	.....	.....	Fish.....	.....	Kolbe (floating pan; diving bell)	1,000,000	1,000,000	1,250,000
Kruse's, Inc. 2253 Germantown Ave., Philadelphia, Pa.	Philadelphia, Pa.; Norfolk, Va.; Plant City, Fla. (Portable freezers used)	Kruse's, Inc.; also other brands if required	Strawberries, peaches, red raspberries, black raspberries, pureed raspberries, blackberries	Cartons (10 lb.); cans (30 lb.); barrels; kegs	Sharp freezer for large containers, quick freezing by air blast for small packages	7,500,000	6,000,000 to 7,000,000	6,000,000 to 7,500,000
Howard Leavens Picton, Ont., Canada	.....	.....	Cherries, strawberries.....	.....	.....	.....	.....	.....
Lockeport Co., Ltd. Lockeport, N. S., Canada	Lockeport, N. S.....	Seacap.....	Fish, fresh, frozen and smoked.....	Boxes, barrels, corrugated and waxed cartons, transparent cellulose and parchment	.....	.....	.....	5,000,000
A & R Loggie Co., Ltd. Loggieville, N. B., Canada	Have nine cold storage plants in Nova Scotia, and New Brunswick	Eagle.....	Chilled and frozen blueberries and all kinds of Atlantic fish	For blueberries, boxes, waxed-paper lined (20, 33 and 35 lb.)	Fast.....	.....	1,000,000 blueberries	.....
W. S. Loggie & Co. Chatham, N. B.	.....	.....	Blueberries.....	.....	.....	.....	.....	.....
Long Island Duck Packing Corp. Riverhead, N. Y.	Freezing at Riverhead, N. Y.; eviscerating at Eastport, N. Y.	Packs for other distributors	Cauliflower, lima beans, oysters, scallops, ducks	Boxes, transparent-cellulose bags, vegetable parchment box liner (consumer and institutional sizes)	Z process and own system of quick freezing (brine film); Birds Eye	32,000,000	6,000,000	8,500,000
Lord-Mott Co. Baltimore, Md.	Baltimore, Md.....	Lord-Mott's.....	Rhubarb, spinach, strawberries.....	Cartons (1 lb.); barrels (450 lbs., for strawberries)	Sharp freezing....	Not large.....	Not large.....	No change
Lunenburg Sea Products, Ltd. Lunenburg, Nova Scotia, Canada	Lunenburg, N. S.....	Highliner.....	Haddock, cod, sole, halibut, scallops, smoked fillets, mackerel, herring, finnan haddies	1, 5 lb. cartons; 10, 15 lb. wood boxes. Cartons are wrapped in transparent-cellulose.	Birds Eye (for cartons); air blast (for boxes)	2,500,000	3,000,000	3,000,000
William E. McIntosh Ave. E., Geneva, N. Y.	Geneva, Newfane, N. Y.; North East, Pa.	.....	Apples, peaches, berries, cherries and vegetables	Barrels, containers (30, 50 lb.) for berries, peaches, cherries, apples; quart containers for apple juice	Sharp freezing at 0°.	4,000,000	5,400,000	5,900,000
R. I. MacLaughlin & Co. P. O. Box 7, Puyallup, Wash.	Salem and Albany, Ore..	Snow-Banner.....	Strawberries, raspberries, cherries, loganberries, youngberries, black raspberries, gooseberries, rhubarb, blackberries	Cups (1 lb.); cartons (12 oz., 2½, 5, 10 lb.); tins (10, 15, 30 lb.); barrels (30, 50 gal.)	Sharp freezer.....	3,500,000	3,500,000	3,500,000
B. E. Maling, Inc. Hillsboro, Ore.	Hillsboro, Ore.....	.....	Apricots, peaches, prunes, rhubarb, strawberries, asparagus, broccoli, brussels sprouts, cauliflower, corn, squash, peas, green beans, wax beans, lima beans, peas and carrots, spinach, crabmeat and salmon	Consumer and institutional packages, barrels	Birds Eye.....	(Output included in that of Frosted Foods Sales Corp.)		
Manitoba Cold Storage Co., Ltd. Higgins Ave. and Meade and Argyle Sts., Winnipeg, Man., Canada	Winnipeg, Man., Canada.	.....	Fish and other commodities.....	Boxes and cartons.....	Series of large cabinets with shelf coils	Large volume (200,000 lb. per day capacity)		.....
Maritime-National Fish, Ltd. Halifax, N. S.	Halifax, N. S.....	Sea-Seald, National, Golden Ray, Maritime	Haddock, codfish, hake, pollock, soles, herring, mackerel, salmon, swordfish, smelts, flounders, skatewings, cod tongues, cod roes, scallops, smoked fillets, kippered, herring, smoked finnan haddies, fillets of haddock and codfish (all kinds of seafoods produced in local waters)	All kinds (from waxed paper, parchment and transparent cellulose to cardboard containers, cartons, transparent-cellulose wrapped packages, wooden boxes, etc., of various sizes and shapes	Own method.....	.....	.....	.....
The Marlyn Fish Co., Inc.	Ketchikan, Petersburg,	Marlyn.....	Halibut, salmon, sablefish.....	Wooden boxes (100 to 500)	Air blast.....	3,000,000	3,000,000	4,000,000

The Marlyn Fish Co., Inc. Box 358, Ketchikan, Alaska	Ketchikan, Petersburg, Juneau, Sitka, Alaska	Marlyn	Halibut, salmon, sablefish	Wooden boxes (100 to 500 lb.)	Air blast	3,000,000	3,000,000	4,000,000
L. C. Mays Co., Inc. 313–319 Lafayette St., New Orleans, La.	Hammond, La.	Mayco	Strawberries	Barrels and cans	Sharp freezer			
Metcalfe Foods, Ltd. Whitby, Ont., Canada			Asparagus, beans, corn, peas, raspberries strawberries, fruit, loganberries					
Walter Mills & Soris, Inc. 330 W. First St., So. Boston, Mass.	Fish Pier, Boston, Mass. (Commonwealth Cold Storage Co.)	Aberdeen, Maple Leaf	Fresh fillets, smoked fillets, finnan haddies, kippered herring	Wooden boxes and cartons (10 to 50 lb.)		700,000	100,000	100,000
Minnesota Valley Canning Co. Le Sueur, Minn.			(Packing frozen foods on experimental scale)					
S. A. Moffett Co. 1331 Western Ave., Seattle, Wash.	Burlington, Stanwood, Everett and Seattle, Wash.; Salem, Ore.	Polar and Samco	All varieties of small fruits, as well as peas, string beans, cut corn, corn on the cob, broccoli, spinach, cauliflower, peas and carrots, lima beans, asparagus tips and zucchini	Cartons (12 oz., 1, 2½ and 5 lb.); tins (5, 10, 15, 30 lb.); barrels (30, 50 gal.)	Air blast and sharp freezers	5,024,000	7,000,000	More than 8,000,000
Monmouth Beach Cold Storage Co., Inc., Monmouth Beach, N. J.	21 Riverdale Ave., Monmouth Beach, N. J.	Polar	Fish and meat	Wood boxes (120 to 125 lb.)	Air blast	1,750,000	1,750,000	1,750,000 or more
J. C. Morgan Co. 102–104 & 106 Bay St., Traverse City, Mich.	Traverse City, Mich.	Morgan	RSP cherries	Tins (30 lb.); barrels			120,000	
Morrison Fish Co. of New York, Inc. 1010 Walabout Market, Brooklyn, N. Y.			Lobster	Paper cups				
Morton Canning Co., Inc. Morton, N. Y.	Morton, Brockport, N. Y.		RSP cherries	Tins (15 and 30 lb.); barrels (450 lb.)	Air blast	787,401	740,250	500,000
B. D. Mukai & Son Vashon, Wash.	Vashon, Wash.	Rock Garden	Strawberries, loganberries, raspberries, red sour cherries, currants	Cups (10 lb.); cans (15, 30 lb.); barrels (30 and 50 gal.)				
Mutual Citrus Products Co., Inc. Anaheim, Calif.			Orange and lemon juice (packed only on special order)	Cans (46 oz., quart, 1 and 6 gal.)				
National Frosted Food, Inc. 864 Washington St., New York, N. Y. (Does no packing but contracts for it to be done under own system and own control)	Plants are located with various food packers	National	Fish, seafoods, fruits, vegetables	Retail package (16, 14, 12, 10 oz.); institutional package (2½ and 5 lb.)	National Froster (own process of quick freezing)	None	100,000	2,000,000
National Fruit Canning Co. 1720 W. Spokane St., Seattle, Wash.	Seattle, Burlington, Chehalis, Wash.	Valamont	Strawberries, raspberries, loganberries, blackberries, youngberries, gooseberries, cherries, peaches, apricots, peas, corn, spinach	Cartons (12 oz., 1, 2½, 5 lb.); tins (5, 10, 15, 30 lb.); barrels (30 and 50 gal.)	Multistage air and sharp freezer	4,354,000	4,700,000	5,000,000
National Sea Foods Co., Inc. Galveston, Tex. (Successor to Gulf Fish & Shrimp Co. of Texas, Inc.)	Galveston, Tex.	Green Diamond	Shrimp	Waxed container (5 lb.)	Air	1,000,000	1,000,000	2,000,000
New England Fillet Co., Inc. 26 Fish Pier, Boston, Mass.	Boston, Mass. (Commonwealth Ice & Cold Storage Co.)	Seacrest	Fillets: perch, haddock, pollock, hake, whiting, mackerel; scallops (in 1-gal. paper containers)	Wooden and paper containers (5, 10, 15 lb.); cans (30 lb.)	Air blast	5,500,075	6,500,000	7,500,000
New England Fish Co. Spokane St. Terminal, Seattle, Wash.	Kalama, Wash.; Eureka, Calif.; Boston, Mass.; New York, N. Y.; Chicago, Ill.; Ketchikan, Petersburg, Sitka, Juneau, Alaska; Vancouver, Butedale, Prince Rupert, B. C.	Belleanna, Nefco, Columbia	Salmon, halibut and other Pacific Coast fish (dressed, and packaged slices and fillets)	Wooden boxes for whole dressed fish; cartons for slices and fillets	Sharp freezing, very low temperature (–30 to –50°)	15,000,000	15,000,000	15,000,000
L. F. Noonan Co., Inc. 2514 Adeline St., Oakland, Calif.	San Jose and Santa Clara, Calif.	Garden Fresh	Peas, asparagus, squash, string beans, broccoli, cauliflower, lima beans (will add apricots, peaches and perhaps berries)	Cartons (1, 2½, 5 lb.; wrapped and lined with transparent cellulose); tins and paper cans (2½, 5 lb.); (boxes 40 lb)	Cabinet freezer with ammonia coils, temperature of —50 deg. F.	2,000,000		2,000,000
Norfolk Berry Growers' Assn. Simcoe, Ont., Canada	Simcoe, Ont.	Norfolk	Strawberries, raspberries	Cups (1 lb.); pails (23 lb.) barrels (50 gal.)	Direct-xpansion ammonia	358,230	344,127	About same as in 1937
North Carolina Fisheries, Inc. Morehead City, N. C.	Morehead City, N. C.	Carolina Coast Fillet	Fish and fish fillet	Carton (lb.)	Frick freezer (24 hour)			
North Pacific Canners and Packers, Inc. Pioneer Bldg., Seattle, Wash.			Fruits, vegetables					
Northwestern Frozen Products, Inc. 208 Columbia St., Seattle, Wash. (Formerly M. Nakata Food Products, Inc.)	Seattle		Peas			540,000	480,000	800,000
O-B-M Frozen Foods Co. 6th and Empire Sts., San Jose, Calif.	San Jose (main plant)	Blade, O-B-M	Artichoke hearts, asparagus, apricots, broccoli, brussel sprouts, cauliflower, cantaloupe, cherries, corn, figs, grapes, honeydew melons, huckleberries, mixed melons, lima beans, nectarines, peas, peaches, persian melons, plums, raspberries, spinach, strawberries, string beans, youngberries, zucchini	12 oz., 2½ lb. containers; and 5, 10, 30 lb. containers for fruit	Using air blast at present; will change to own quick-freezing method	Not in existence		
O'Donnell-Usen Fisheries Fish Pier, Boston, Mass	Boston, Mass.	O'Donnell Quality and Taste O'Sea	Haddock, cod, pollock, sole, sea perch, hake, finnan haddies, smoked fillets, scallops	All types — industrial, consumer, tins (25 lb.), barrels	Air blast	18,000,000	16,000,000	16,000,000
Olney & Carpenter, Inc. Wolcott, N. Y.	Wolcott and Eden, N. Y.	O & C Frost Seald.	Peas, asparagus, spinach, rhubarb, wax beans, green beans, lima beans, broccoli, cut corn, corn on cob, cherries, strawberries, cauliflower, brussels sprouts, squash, red raspberries, black raspberries, blueberries, peaches	Simplex two-piece waxed container with transparent cellulose and waxed paper	Contact and air blast			

FROZEN FOODS DIRECTORY

Company	Freezing plant location	Brand	Products	Containers	System	1937 output (lb.)	1938 output (lb.)	Intended 1939 output (lb.)
O'Loane, Kiely & Co., Ltd. 1058 Hamilton St., Vancouver, B. C., Canada	New Westminister (Pacific Coast Terminals Cold Storage, Ltd.)	O.K.	Strawberries, raspberries, loganberries, blackberries, black and red currants, gooseberries, peas, beans, spinach, asparagus, cut corn and corn on the cob	Berries: 1 lb. waxed paper cups; tins (15, 30 lb.); corrugated boxes (5, 10, 20 lb.); barrels (50 gal.) Vegetables: 10, 12 oz. 2½, 4, 5 lb. containers	Direct expansion coils, air circulation	.....	.....	600,000
Omaha Cold Storage Omaha, Neb.	Omaha, Neb.	Ocoma Ready to Cook poultry. Takoma Ready to Cook turkeys and number of private labels	Poultry (fully dressed)	Consumer packages, standard poultry packages, barrels	Air blast or tunnel.	20,000,000	20,000,000	20,000,000
Orchard Products Co. 3601–05 Wazee St., Denver, Colo.	.....	.....	Cherries	.....	Sharp freezing	Pack on average of 80,000 lb. a year		
Oregon Fruit Products Co. Salem, Ore.	Salem, Ore.	Oregon	Strawberries, loganberries, red and black raspberries, boysenberries, youngberries, plums	Tins (from 5 to 30 lb.); barrels (50 gal.)	Direct expansion	600,000	550,000	600,000
Oswald & Taube Co. Cincinnati, Ohio	.....	.....	Frozen fruits	Cans (10, 15, 30 lb.); barrels.	.....	.....	.....	.....
Pacific North West Canning Co. P. O. Box 111, Puyallup, Wash.	Puyallup, Wash.; Salem, Ore.	.....	Strawberries, red raspberries, black raspberries, loganberries, blackberries, red currants, gooseberries, RSP cherries	Tins and barrels	Sharp freezing at —10 deg. F.	701,025	507,810	About same as in 1937
Packaged Foods, Inc. Box 470, Raleigh, N. C.	Hamlet, N. C.	.....	Strawberries, peaches, raspberries, peas, lima beans, asparagus, broccoli, spinach	Tins (10, 30 lb.); industrial and consumer packages	Air blast	Small production	Medium production	.....
Paulus Bros. Packing Co. Trade & High Streets, Salem, Ore.	.....	Blue Tag	Strawberries, loganberries, red cherries	Barrels (50 gal.)	Sharp freezer	.....	.....	.....
Frank Pilley & Sons, Inc. Sioux City, Iowa	Sioux City, Iowa	Pilley's	Poultry (full drawn), cut corn and corn on cob, asparagus, rhubarb, wax beans, cut string beans	Boxes, transparent-cellulose and glassine	Z process	740,000	1,000,000	1,000,000
Pony Brand Essence & Syrup Co., Ltd. Ave. Industrielle, Quebec, Canada	Quebec	Pony	Strawberries, raspberries, blueberries	English Mono containers (1, 2 and 6 lb.); pails (30 lb.)	Ammonia	200,000	275,000	300,000
Pratt's Fresh Frozen Foods, Inc. 513 W. 16th St., New York, N. Y.	Plants at various points throughout United States	Pratt's	Asparagus, broccoli, cauliflower, corn, lima beans, string beans, succotash, wax beans, peas, spinach, brussels sprouts, peas and carrots, apples, apricots, cranberries, cherries, blackberries, blueberries, loganberries, pineapple, peaches, plums, raspberries, rhubarb, strawberries, youngberries, orange, lemon, pineapple, grapefruit juices; full line fish, seafood, meats and poultry	Waxed cartons (10, 12, 16 oz., 2½ lb.) transparent-cellulose lined; lithographed tins (5, 10, 30 lb.)	Air blast, contact and own process	.....	.....	.....
Pure Fruit Juices, Inc. 220 Bagley Ave., Detroit, Mich.	Los Angeles, Calif.	.....	Citrus juices, (including navel orange juice); (proposes to freeze other juices and various fruits)	Cans (1 pt., 3, 10 and 12 lb.).	Finnegan spiral-tubular freezer	.....	1,500 hourly capacity	.....
Ray-Maling Co., Inc. Hillsboro, Ore.	Woodburn, Ore.	.....	Strawberries, raspberries, youngberries, green beans	Consumer and institutional packages; barrels	Birds Eye	(Output included in that of Frosted Food Sales Corp.)		
The Reynolds Preserving Co. Sturgeon Bay, Wis.	Frozen at Milwaukee, Wis.; Chicago, Ill.; Minneapolis, Minn.; Packed at Sturgeon Bay, Wis.	Reynolds, Cherryland	Pitted red cherries	Tins (enamel-lined) (15 and 30 lb.); barrels (paraffine-lined fir)	Sharp freezer	250,000	250,000	500,000
Richardson & Holland, Inc. 1001 John St., Seattle, Wash.	Seattle, Wash.	.....	Strawberries	Cans (30 lb.); barrels (450 lb.)	.....	295,000	240,000	240,000
Rocky Mountain Packing Corp. P. O. Box 1618, Salt Lake City, Utah	Ogden, Murray, Tremonton, Utah	Twin Peaks, Snoline, Glenwood	Peas, lima beans, string beans, spinach, asparagus, broccoli, other vegetables and miscellaneous fruits	Flat cartons (12 oz., 2½ and 5 lb.)	Air blast	.....	1,000,000	"Increased production scheduled"
Rood & McLean Fruit Products Westfield, N. Y.	Westfield, N. Y.; Erie, Pa.	.....	Cherries, raspberries, strawberries, currants, grape pulp	Barrels	Sharp freezer	225,000 to 450,000	225,000 to 450,000	225,000 to 450,000
Edward L. Saisselin O & W Bldg., Oswego, N. Y.	Oswego, N. Y.	Karat-Gold	Spinach, broccoli	Waxed cartons (2½ lb.)	Air blast	60,000	100,000	250,000
Santa Cruz Fruit Packing Co. 1175 57th Ave., Oakland, Calif.	Santa Cruz, Calif.	.....	Vegetables	Simplex cartons (10, 12, 14, 16 oz.)	Air blast	None	40,000 (experimental pack)	1,500,000
Sherman White Packing Co. Fort Wayne, Ind.	Fort Wayne, Ind.	Birds Eye	Ready-to-cook poultry	Birds wrapped in transparent cellulose	Birds Eye	(Output included in that of Frosted Foods Sales Corp.)		
Snyder Packing Corp. 40 Franklin St., Rochester, N. Y.	.....	.....	Vegetables, fruits	.....	Birds Eye	(Output included in that of Frosted Foods Sales Corp.)		
Sodus Fruit Farm, Inc. Sodus, N. Y.	Sodus, N. Y.	Sodus Fruit Farm	Cherries	Tins (30 lb.); barrels	Air blast	.....	1,600,000 to 2,000,000	2,000,000
South Haven Fruit Exchange P. O. Box 168, South Haven, Mich.	South Haven, Mich.	.....	Strawberries, raspberries, plums	Barrels	Ammonia	540,000	450,000	500,000
Southern California Youngberry Growers' Assn. 1807 E. Olympic Blvd., Los Angeles, Calif.	.....	.....	Berries	.....	.....	.....	.....	.....
Spencer Packing Co. 688 Third St., Lebanon, Ore.	Lebanon, Ore.	Spencerian	Strawberries, red raspberries, black raspberries, loganberries, youngberries, boysenberries, prunes	Tins (15 and 30 lb.); barrels (30 and 50 gal.)	Z process	400,000	350,000	.....
Springbrook Packing Co., Cooperative Springbrook, Ore.	Springbrook, Ore.	Output nearly all sold under buyer's brand	Strawberries, loganberries, red raspberries, youngberries, boysenberries, red sour cherries	Tins (10, 30 lb.); boxes (20, 30 lb.); barrels	Air blast	240,800	240,800	245,000
Stayton Canning Co., Stayton, Ore.	Salem, Ore. (Terminal Ice & Cold Storage Co.)	.....	Strawberries	Barrels (50 gal.)	Sharp freezer	500,000	1,000,000	.....
A. L. Stewart & Sons Cherryfield, Me.	Portland, Me.	Stewart's	Blueberries	Wooden boxes (30 lb.)	Sharp freezing	.....	.....	200,000 to 500,000

Springbrook Packing Co., Cooperative Springbrook, Ore.	Salem, Ore.	.....	youngberries, boysenberries, red sour cherries	30 lb.); barrels				
Stayton Canning Co., Stayton, Ore.	Salem, Ore. (Terminal Ice & Cold Storage Co.)	.....	Strawberries	Barrels (50 gal.)	Sharp freezer	500,000	1,000,000	.....
A. L. Stewart & Sons, Cherryfield, Me.	Portland, Me.	Stewart's	Blueberries	Wooden boxes (30 lb.)	Sharp freezing	.....	.....	200,000 to 500,000
Stokely Brothers & Co., Inc., Indianapolis, Ind.	Indiana (Indianapolis), Wisconsin, California, Delaware, Washington, and Texas (Mercedes)	Honor	Extensive line of fruits and vegetables	Consumer and institutional	Quick-freezing (Low temperature air blast)	.....	.....	.....
Sunny Brook Berry & Hop Yards, Roy E. Lathrop & Sons Grants Pass, Ore.	Grants Pass, Ore.	.....	Blackberries	Barrels (50 gal.)	Sharp freezing	200,625	337,500	250,000
Swift & Co., Union Stock Yards, Chicago, Ill.	Chicago, Ill.	.....	Poultry (full-drawn); fresh meat cuts (on limited scale)	Birds wrapped in transparent cellulose	Quick freezer	.....	.....	.....
Twentieth Century Frosted Foods Corp. 335 North Medina St., San Antonio, Tex.	Twentieth Century	San Antonio, Tex.	Vegetables and fruits	Cardboard containers (1, 3, 5 lb.)	Air blast	135,000	200,000	200,000
University of Tennessee, Engineering Experiment Station Knoxville, Tenn.	Knoxville, Tenn.	Tenn. Quick Frozen	Youngberries, strawberries, peaches	Tins (20 lb.); cartons (1, 2½, 5 lb.) Product is in heat-sealed transparent cellulose bags inside cartons	Immersion in brine or sugar solution at temperature of 3 to 5 deg. F.	116,766	350,000	350,000
Vacuum Frosted Foods Corp. Mills Bldg., San Francisco, Calif.	Sacramento, Calif.; portable freezer also used	Kuster–Frosted	Asparagus, spinach, berries, peaches, apricots, lima beans, string beans, peas, broccoli, brussels sprouts, fish and shellfish	Flat cartons with inner and outer wrapper	Kuster-vacuum system (all products are quick frozen in cartons)	200,000	300,000	3,000,000
Vicana Foods, Inc. Obrapia 19, Havana, Cuba	Havana, Cuba	Vicana	Sliced and crushed pineapple	Round containers, paper bags in paraffined cardboard boxes.	Z process	None (Output included in that of Z Pack Corp.)	250,000	300,000
Virginia Frosted Foods, Ice Storage Corp. Richmond, Va.	Near Richmond, Va.	F-F-V Frosted Food Values	Locally grown berries, fruits and vegetables; also Chesapeake Bay oysters and fish	Paper cups with transparent-cellulose window in cover and with false bottom to permit solid CO^2 to be placed in package	Air-line blast in connection with special solid CO^2 units (solid CO^2 plant will be connected with processing plant)	Not in production until 1939		
Washington Canners Cooperative 707½ Main St., Vancouver, Wash.	Vancouver, Wash.	Flavrpack	Asparagus, raspberries, strawberries, cherries	Boxes, cups, cartons	Sharp and quick freezing	1,500,000	.....	.....
Washington Frosted Foods, Inc. 71 Spring St., Seattle, Wash.	Kent, Wash.	Penguin, Green Bow	Peas, corn, string beans, carrots and peas, cauliflower, asparagus, broccoli, spinach	Industrial and consumer	Air blast and belt	3,000,000	3,000,000	3,000,000
Washington Packers, Inc. Sumner, Wash.	Sumner, Puyallup, Wash.	Dewkist and Kolpak	Red raspberries, black raspberries, RSP cherries, black sweet cherries, apricots, blueberries, blackberries, huckleberries, sliced peaches, gooseberries, strawberries, currants, loganberries, youngberries; green beans, cut corn, corn on cob, cauliflower, brussels sprouts, asparagus, peas, beans, broccoli, spinach, peas and carrots, lima beans	Cartons (1, 2½ and 5 lb.); boxes (25 lb.); tins (10, 15, 30 lb.); barrels (50 gal.)	Metal belt for quick freezing; cold storage room for barreled products	9,750,000	.....	.....
Waterman & Sons, Inc. Ontario Center, N. Y.	Morton, Ontario Center, N. Y.	.....	Cherries and raspberries	Tins (10, 15 and 30 lb.); barrels (450 lb.)	Air blast	400,000	400,000	500,000 to 800,000
Webster Canning & Preserving Co., Inc. Webster, N. Y.	Ontario, N. Y. (Ontario Cold Storage Co.)	Webster	Cherries	Tins (15, 30 lb.)	Sharp freezer	Did not freeze	Did not freeze	Subject to crop conditions
Wegner Canning Corp. Sodus, N. Y.	Sodus, N. Y.	Wegner	Cherries	Tins (10, 15, 30 lb.); barrels (450 lb.)	Subzero temperatures in cold storage plant	900,000	800,000	800,000
E. A. Weilbacher Co. 1300 Factory Place, Los Angeles, Calif.	.....	Finest Food	Apricots, peaches	All sizes (5, 10, 20, 50 lb.)	.....	36,000	40,800	100,000
Westfield Planters Cooperative Fruit Products, Inc. 60 Franklin St., Westfield, N. Y.	Westfield, N. Y.	Westfield Maid	Strawberries, raspberries, cherries	Barrels; cans (30 lb.); tins for small fruits (10 lb.)	Z process	.....	.....	.....
Williamette Valley Prune Assn. S. E. Cor. Trade & High Sts., Salem, Ore.	Salem, Ore.	.....	Strawberries, blackberries, pitted prunes	Tins (30 lb.); barrels	Sharp freezer	10 cars	.....	.....
The B. Wilson Co., Ltd. 536–538–540 Herald St., Victoria, B. C., Canada	Victoria, B. C.	Wilson's	Peas, beans, asparagus, corn on cob; strawberries, raspberries, loganberries, cherries	Cartons (12 oz., 2½, 5 lb.); cup (15 oz.); can (10 lb.)	Air blast	None	34,500	103,000
Wisconsin Fishing Co. Green Bay, Wis.	Green Bay, Wis.	None	Fish	Boxes, cartons and bulk	Ice and salt	500,000	500,000	200,000
Witt's Med-O-Sweet Farm Osseo, Minn.	Med-O-Sweet, Red-E-Stuft	Osseo, Minn.	Strawberries, raspberries, chickens, turkeys, ducks and geese	Sealright containers for berries (1 and 9 lb.); tins (30 lb.); poultry wrapped in transparent cellulose	Sharp freezing (−15 to −20 deg.)	.....	Berries, 9,000; poultry, 60,000	100,000
J. G. Wright. Wilson, N. Y.	.....	.....	RSP frozen cherries	Cans (30 lb.); barrels (450 lb.)	.....	.....	.....	.....
Z Pack Corp. 11 Park Pl., New York, N. Y. (Licensed use of Z process, but did not pack itself in 1938 or previously)	Riverhead, Rochester, New York, N. Y.; Havana, Cuba; Des Moines, Sioux City, New Ulm, Minn.; Cuero, Tex.; New Bedford, Mass.; also portable equipment	Z Pack	Ducks (at Riverhead); fruits and vegetables (at Rochester); fruits (at Havana); fish and seafood (at New York and New Bedford); poultry (at Des Moines, New Ulm, Sioux City, and Iowa Falls); seafood and other products (at Cuero)	Cartons (1, 2½, 5 lb.); tins (10, 30 lb.)	Z process quick-freezing, direct-contact, liquid refrigerant sprays applied to products on traveling conveyor; uses sugars, neutral solutions, or salt solutions, some products are quick frozen by indirect contact	5,074,000	10,000,000 to 15,000,000	15,000,000
The Zeropack Co. 2d and Race Sts., Cincinnati, Ohio	Winchester, Va.	Zeropak	Apples, cherries, peaches, strawberries, etc.	Cans (10, 30 lb.); barrels	Sharp freezing	.....	.....	.....

FROZEN FOODS DIRECTORY SUPPLEMENT

(Information in this supplement is repeated from the Frozen Foods Directory published in Food Industries in April, 1938, no further data on the companies listed being available.)

Company	Freezing plant location	Products	Container	System	1936 output (lb.)	1937 output (lb.)	1938 output (lb.) [1]
Allen Fruit Co. 295 Front St., Salem, Ore.	.....	Strawberries, raspberries, peaches, cherries, prunes, apricots, loganberries, blackberries, corn, peas.	.....	.....	.....	.....	.....
F. M. Ball & Co. 5733 San Leandro St., Oakland, Calif.	.....	Peas.....	.....	Cooke, modified (batch plate).	.....	.....	.....
Barker Canning Co. Barker, N. Y.	Packed at Northeast, Pa.; Wilson, N. Y.; Barker, N. Y. Frozen at Buffalo, N. Y.	Cherries.....	Tins (30 lb.).....	.....	.....	.....	.....
Joseph Buchwald & Co. 855 McAllister St., San Francisco, Calif.	.....	Berries, cherries.....	.....	.....	.....	.....	.....
Canal Fish Co. Sandwich, Mass.	Sandwich, Mass.....	Fish.....	Boxes (60 to 70 lb. and 110 to 150 lb.)	Sharp freezer.....	1,000,000	1,000,000	.....
Case Packing Co., Inc. Sodus, N. Y.	.....	Fruit juices, strawberries, raspberries, cherries.	.....	.....	.....	.....	.....
Eau Claire Packing Co Eau Claire, Mich.	Eau Claire, Mich.....	Black raspberries, cherries.....	Tins (20 lb.); barrels (400 lb.).	Sharp freezer.....	130,000	130,000	200,000
Elyria Canning Co. Elyria, Ohio.	Elyria and Cleveland, Ohio...	Rhubarb, strawberries, blackberries, raspberries, elderberries, gooseberries, prunes, plums.	Cans (25 and 30 lb.); barrels..	Birds Eye.....	600,000	600,000	600,000
A. N. Faulkner & Co. Tilgham, Md.	.....	Strawberries.....	Cans (30 lb.); barrels (50 gal.)	.....	33,000	83,000	As much or more than in 1938.
M. Feigenbaum & Sons. 8–9 Diamond Sq., Pittsburgh, Pa.	Washington, Oregon, California; few commodities frozen in East.	Artichoke hearts, asparagus, stringless beans, lima beans, wax beans, broccoli, brussels sprouts, cauliflower, corn on cob, cut corn, peas, peas and carrots, spinach; apricots, blackberries, boysenberries, blueberries, cherries, columbia reds, dewberries, figs, fruit salad, grapes, huckleberries, loganberries, peaches, pineapple, prunes, raspberries, strawberries, youngberries; swordfish, halibut and salmon steaks; salmon, sole, flounder, mackerel, ocean perch, whiting, haddock, pollock and hake fillets; crabmeat, oysters, scallops, clams, shrimp, lobster, lobster tails; lemon, orange, grapefruit and pineapple juices; poultry, broilers, fryers, roasters, fowl, turkeys, ducklings.	Cartons (12 oz., 1, 2, 2½, 5 lb.); cans (15, 30 lb.); boxes (15, 30 lb.); corn on cob wrapped in transparent cellulose. Containers carry "Little America" brand.	Tunnel system.....	670,000	4,000,000	8,000,000
Foley & Ward, Inc. Sodus, N. Y.	.....	Cherries.....	.....	.....	.....	.....	.....
Fresh Frozen Fruits, Inc. 516 Seaton St., Los Angeles, Calif.	.....	Youngberries (contemplate freezing other berries and vegetables).	.....	.....	.....	.....	.....
Fresh Frozen Products Co. Cold Storage and Fruit Terminal, Mobile, Ala.	Birmingham and Mobile, Ala.	Strawberries, blueberries and shrimp. (Expect to pack peaches, strawberries, and pineapples.)	All types (from 5 lb. to barrels).	Shelf-type quick freezer. Also specially designed quick freezer.	Did not operate.	1,000,000	.....
Glacier Bay Packing Co South Bend, Wash.	.....	Oysters.....	Pint lithographed containers..	Air blast.....	.....	1,500 lb. per hour capacity.	.....
Gould Fruit Products 480 Lake Ave., Rochester, N. Y.	Rochester, N. Y.....	Apples, cherries, raspberries, prunes, rhubarb, strawberries, blueberries.	Cans (10, 15, 30 lb.).....	Sharp freezer.....	300,000	400,000	400,000
Gresham Berry Growers, Inc. Gresham, Ore.	Gresham, Ore.....	Strawberries, raspberries, youngberries, blackberries, loganberries, boysenberries.	Cartons (1 lb.); tins (10, 15 and 30 lb.); barrels.	Air blast and coils...	4,448,000	5,400,000	4,981,000
Hartmann Dried Fruit Co., Inc. Macedon, N. Y.	Rochester, N. Y.....	Black, Columbian and cuthbert raspberries.	Tins (15, 30 lb.); barrels.....	.....	.....	.....	.....
Haserot Co. 521 Woodland Ave., Cleveland, O.	Bellevue, Ohio; Northport, Mich. (Freezing equipment part of cherry factories).	RSP Cherries.....	Tins (15 and 30 lb.); barrels...	Sharp freezing.....	240,000	160,000	300,000
A. B. Haslacher 1 Montgomery St., San Francisco, Calif.	Salinas, Calif.....	Lima beans, spinach, string beans.....	Cartons (sealed 1, 5 lb.).....	Freeze in commercial ice plant by own system (brine freezer).	.....	.....	.....
Haxton Canning Co., Inc. Oakfield, N. Y.	.....	Peas, green and wax beans, cut corn, corn on cob.	Consumer and institutional...	.....	.....	.....	.....
Henderson Brothers, Inc. Monticello, Ga.	.....	Fruits, vegetables, chickens, squabs.....	.....	.....	.....	.....	.....
Hershey Packing Corp Snohomish, Wash.	.....	Corn, peas, spinach, asparagus, snap beans, strawberries, raspberries, cherries.	.....	.....	.....	.....	.....
F. H. Hogue of Washington Frosted Foods Division, Inc. Kent, Wash.	Kent, Wash.....	Asparagus, peas, corn, spinach, broccoli, beans, berries, fruit.	All types; specialize in flat type; also cups and tubs.	Peas and corn individually frozen.	.....	.....	.....

Earl T. Howell, Ketcham Ave., Newfane, N. Y.		Raspberries, cherries, red currants, grape pulp, fruit juices.					
Humboldt Canning Co, Humboldt, Tenn.	St. Louis and Louisville	Strawberries	Tins, barrels, cartons		Did not pack...	400,000	900,000
Hunt Brothers Packing Co, 145 Division St., Salem, Ore.	Salem and Puyallup, Wash.; San Francisco, Calif.	Peas, strawberries, raspberries, loganberries cherries, blackberries, corn, peaches, prunes, youngberries.					
H. W. Jacobs Co, Pleasant Grove, Utah	Provo, Utah	Strawberries, cherries, raspberries	Cans (10, 30 lb.); barrels (50 gal.).	Sharp freezer	245,000	500,000	500,000
Kelley, Farquhar & Co, Port of Tacoma, Tacoma, Wash.	Tacoma, Wash.; Salem, Ore.	Rhubarb, gooseberries, strawberries, cuthbert red raspberries, mixed red raspberries, black raspberries, youngberries, blackberries, apricots, peaches, Italian plums, pitted sour cherries, sweet cherries, huckleberries, asparagus, green beans, corn, peas and carrots, peas, wax beans, spinach, broccoli, cauliflower, brussels sprouts.	For vegetables, 12 oz., 2½, 5, 10 lb., packages; for fruits and berries, 1, 5, 10, 30 lb. and 30 and 50 gal. containers.	Tunnel system for freezing vegetables.	None	2,000,000	3,000,000
Irwin H. Kolbe Co, Erie, Pa.		Fish		Kolbe (indirect brine).			
Kuhner Packing Co, Muncie, Ind.	Muncie, Ind	Meats	Regular meat packages	Frick freezing equipment.			
Libby-Burshell Fisheries, Vinalhaven, Me.		Fish		Kolbe (floating pan).			
Ralph M. Meiler, Gasport, N. Y.	Buffalo, N. Y	Strawberries; columbian, red and black raspberries; cherries; grape pulp; and crabapple cider.	Tins (30 and 50 lb.); barrels	Sharp freezing	1,240,000	1,560,000	2,000,000
Miller Canning Co, Mount Vernon, Wash.	Seattle, Wash	Peas	Cartons (waxed)	Loose or in cartons...	None	280,000	1,500,000
C. H. Musselman Co, Biglerville, Pa.		Cherries and other fruits in season		Frick refrigerating equipment.			
Chas. Neubert Strawberry Co., Inc, 114 E. York St., Baltimore, Md.	Baltimore, Md	Strawberries, peaches, blackberries	Tins (30 lb.); barrels (450 lb.).		1,350,000	1,350,000	
Niagara Frosted Foods, Ltd, Hamilton, Ont., Canada.	Stoney Creek, Forthill, Kingston, Ont.	Fruits and vegetables					
A. E. Nickerson, Ltd, Yarmouth, N. S., Canada.		Lobster		Indirect brine; cans used.			
F. J. O'Hara & Sons, Inc, 21 Fish Pier, Boston, Mass.	Boston, Mass. (Commonwealth Ice & Cold Storage).	All varieties of fish, such as haddock, cod, pollock, redfish, mackerel, etc.	Containers range from 10-lb. fillet boxes to 150-lb. boxes.	Air blast	450,445	419,463	
O'Hara Bros. Company, Inc, 22 Fish Pier, Boston, Mass.	South Boston, Mass	Fillets of haddock, pollock, cod, hake, cusk, redfish, sole, flounder, and mackerel.	Wooden boxes (10 and 15 lb.).	Frick equipment for quick-freezing; temp. as low as −40 deg. F.		Fillets, 25,000,000; mackerel and whiting, 5,000,000.	Fillets, 25,000,000; mackerel and whiting, 5,000,000.
Olympia Canning Co, Columbia & A Sts., Olympia, Wash.		Strawberries, raspberries, loganberries, blackberries.	Barrels				
Orleans County Canning Co, Albion, N. Y.		Cherries					
Pleasant Grove Canning Co, Pleasant Grove, Utah.	Provo, Utah	Fruits and berries	Tins (10, 20, 30 lb.); barrels	Sharp freezer	200,000	600,000	350,000
Progress Packing Co, Chambersburg, Pa.	Chambersburg, Pa	Poultry (full drawn)	Birds wrapped in transparent cellulose.	Cridericed process; brine at −3 to −5 deg. F. passed through tube inserted in eviscerated bird.			
Reid, Murdoch & Co, Front & Market Sts., Salem, Ore.		Strawberries, raspberries, cherries, loganberries, youngberries. (Packed mostly for own use.)	Barrels (50 gal.); tins (30 lb.)	Sharp freezer			
W. H. Roberts & Co, Baltimore, Md.	Baltimore, Md	Strawberries, spinach					
Salter Canning Co, North Rose, N. Y.		Red sour pitted cherries	Tins (30 lb.); barrels (450 lb.).	Sharp freezer	None	134,250	
E. E. Saunders & Co, Pensacola, Fla.		Red snapper, grouper, pompano, spanish mackerel, blue fish, mullet, scallops, shrimp.	10 lb. packages for shrimp and fillets.	Cabinet freezer (Vilter Mfg. Co.).		20,000 lb. per day capacity.	
A. F. Scharping, Albion, N. Y.		Strawberries, cherries					
Seven Seas Fisheries, Ltd, Liverpool, N. S., Canada.		Fish		Kolbe (floating pan).			
E. A. Smith & Co, Baltimore, Md.	Baltimore, Md	Strawberries, black and red raspberries, blackberries, pineapples and peaches.	Cans (10, 15, 30 lb.); barrels	Sharp freezer	750,000	1,000,000	2,000,000
Sodus Canning Co, Box J, Sodus, N. Y.	Sodus, N. Y. (Sodus Cold Storage Co.)	Strawberries, red sour cherries	Tins (15, 30 lb.); barrels	Air blast	120,000	226,000	250,000 to 300,000.
Southern Packing Co., Inc, Baltimore, Md.	Baltimore, Md.; Waynesboro, Pa.	Strawberries, red raspberries, black raspberries, peaches, pineapple, lima beans, stringless beans, peas.	Tins (30, 50 lb.); barrels (30, 50 gal.).	Quick freezing			
Sunshine Packing Corp, 2715 East 34 St., Cleveland, O.	Cleveland, Ohio; North East, Pa.; Ponchatoula and Albany, La.	Strawberries, cherries, red raspberries, black raspberries, blackberries, red currants, black currants, crushed pineapple, peaches, apricots, elderberries, gooseberries, blueberries, columbian raspberries, grapes, prunes, pluma.	Cans (15, 30 lb.); barrels (450 lb.).	Sharp freezer	10,000,000 to 12,000,000	11,000,000 to 13,000,000	9,000,000

[1] Estimated.

FROZEN FOODS DIRECTORY SUPPLEMENT

Company	Freezing plant location	Products	Container	System	1936 output (lb.)	1937 output (lb.)	1938 output (lb.)[1]
R. C. Teachey & Co., Inc.	Norfolk, Va.	Strawberries, blackberries	Tins (30 lb.); barrels (30, 50 gal.);		1,500,000	2,500,000	
Wallace, N. C.							
G. N. Turner Canning Co.	Snohomish, Wash.	Berries, corn, spinach, peas	Fiber (wax-wrapped ½ to 5 lb.).	Belt	300,000	600,000	1,200,000
Maple St., Snohomish, Wash.							
Vancouver Island Cooperative Fruit Exchange.	Lake Hill, B. C.	Strawberries, loganberries, raspberries, gooseberries, cherries and many small fruits.	Barrels; tins (1 gal.); other containers.	Sharp freezing		160,000	
Saanichton P. O., Victoria, B. C.							
Wall Street Packing Co.	Watsonville, Calif.	Strawberries, loganberries, youngberries, boysenberries, blackberries, raspberries, cherries, apricots, plums, peaches, spinach, broccoli, cauliflower, string beans, rhubarb, shelled peas, lima beans.	Industrial, institutional, and consumer packages; barrels; tins (25 lb.).	Sharp freezer		1,000,000	
P. O. Box 254, Watsonville, Calif.							
Ward & LeRoy, Inc.	Sodus, N. Y. (Sodus Cold Storage Co.)	Sour cherries	Cartons (1, 10, 30 lb.)	Sharp freezer	200,000	1,000,000	1,000,000
Box 5, Sodus, N. Y.							
Whidby Island Berry Growers Assn.	Langley, Wash.	Strawberries	Barrels (50 gal.)	Sharp freezer	280,000	200,000	
Langley, Wash.							
D. H. Wright & Co.	Seattle, Wash.	Strawberries, red raspberries, loganberries, prunes, peaches, apricots, currants, huckleberries, peas, corn, corn on cob, spinach, green beans, broccoli, carrots, asparagus, etc.	Cartons (1, 2½, 5 lb., for vegetables); tins (15 and 30 lb.); tubs (1 lb. for fruits); barrels; half barrels.	Sharp freezer. (Products quick frozen).	1,200,000	3,000,000	5,000,000
130 E. Main St., Rochester, N. Y.							

[1] Estimated.

DIRECTORY OF CUSTOM FREEZERS

(In this list are included cold storage warehouses equipped to do custom freezing of food products. Many of them do sharp freezing, some quick freezing.)

ALABAMA

Alabama State Docks Cold Storage and Fruit Terminal,
Mobile, Ala.

ALASKA

Ketchikan Cold Storage Co.,
Ketchikan, Alaska

ARKANSAS

Ward Ice Industries,
Tenth St. and Grand Ave., Fort Smith, Ark.

CALIFORNIA

Bakersfield Ice and Cold Storage Co.,
2409 Union Ave., Bakersfield, Calif.
California Consumers Corp.,
230 W. Jefferson Blvd., Los Angeles, Calif.
Consumers Ice & Cold Storage Co.,
P. O. Box 710, Sacramento, Calif.
Haslett Warehouse Co.,
280 Battery St., San Francisco, Calif.
Merchants Ice and Cold Storage Co.,
Lombard and Battery Sts., San Francisco, Calif.
Modesto Refrigerating Co.,
220 Grand St., Modesto, Calif.
National Ice and Cold Storage Co.,
417 Montgomery St., San Francisco, Calif.
San Diego Ice and Cold Storage Co.,
825 Imperial Ave., San Diego, Calif.
Security Warehouse & Cold Storage Co.,
350 North First St., San Jose, Calif.
The Union Ice Co.,
Chestnut Ave. & Laurel St., Santa Cruz, Calif.
Union Ice and Storage Co.,
354 Pine St., San Francisco, Calif.

COLORADO

Beatrice Creamery Co.,
P. O. Box 5108, Denver, Colo.
Mountain Ice & Coal Co.,
P. O. Box 1457, Pueblo, Colo.
The Union Ice and Fuel Co.,
Box 134, Colorado Springs, Colo.

CONNECTICUT

New Haven Cold Storage,
46 George St., New Haven, Conn.

DELAWARE

Diamond Cold Storage Co.,
827 Market St., Wilmington, Del.

FLORIDA

Tampa Cold Storage & Warehouse Corp.,
Cor. Marion & Cass Streets, Tampa, Fla.
Tampa Union Terminal, Inc.,
P. O. Box 2761. Tampa, Fla.
Wade, Farris & Wade,
Jacksonville, Fla.

GEORGIA

Thomasville Ice and Manufacturing Co.,
P. O. Box 300, Thomasville, Ga.

IDAHO

Boise Cold Storage Co.,
304 So. 16th St., Boise, Idaho.
Twin Falls Feed & Ice Co.,
Box 903, Twin Falls, Idaho.

ILLINOIS

G. H. Hammond Co.,
Union Stock Yards, Chicago, Ill.
Mid-City Cold Storage Co.,
30 N. Green St., Chicago, Ill.
Peoria Service Co.,
1122 South Adams St., Peoria, Ill.
Polar Service Co.,
888 West Elderado St., Decatur, Ill.
United States Cold Storage & Ice Co.,
2101 to 2129 West Pershing Rd., Chicago, Ill.

INDIANA

Ebner Ice and Cold Storage Co.,
Vincennes, Ind.
Evansville Ice & Storage Co., Inc.,
Eighth, Court and Union Track, Evansville, Ind.
Indiana Terminal & Refrigerating Co.,
230-248 S. Pennsylvania St., Indianapolis, Ind.

IOWA

Central Service Co.,
100 Maple St., Des Moines, Ia.
E. B. Higley & Co.,
409 S. Federal Ave., Mason City, Ia.
Iowa Grain & Produce Co.,
800-804 Jefferson St., Burlington, Ia.
Kohrs Cold Storage Co.,
1225 West 2nd St., Davenport, Ia.
Frank Pilley and Sons, Inc.,
First and Court St., Sioux City, Ia.

KANSAS

The Midwest Cold Storage and Ice Corp.,
Fifth and Kaw River, Kansas City, Kan.
Parsons Cold Storage Co.,
2015-2031 Gabriel Ave., Parsons, Kan.
The Wichita Ice & Cold Storage Co.,
213-229 South Rock Island Ave., Wichita, Kan.

LOUISIANA

Central Storage & Transfer Co., Inc.
Commerce at Crockett St., Shreveport, La.
Liberty Ice & Cold Storage,
2201 Clio St., New Orleans, La.
Peoples Ice & Cold Storage Inc.,
Box 148, Morgan City, La.

MAINE

New England Cold Storage Co.,
323-329 Commercial St., Portland, Me.

MARYLAND

The Baltimore Cold Storage & Ice Co.,
19 E. Pratt St., Baltimore, Md.
Consolidated Cold Storage,
416 South Eutaw St., Baltimore, Md.
Eastern Shore Public Service Co.,
Salisbury, Md.
Merchants Terminal Corp.,
Monument & Forrest Sts., Baltimore, Md.

MASSACHUSETTS

Atlantic States Warehouse & Cold Storage Corp.,
385 Liberty St., Springfield, Mass.
Massachusetts Fish-Ice & Cold Storage Co.,
Pier 4, Northern Ave., Boston, Mass.
Quincy Market Cold Storage and Warehouse Co.,
178 Atlantic Ave., Boston, Mass.
Springfield Cold Storage Co., Inc.,
P. O. Box 784, Springfield, Mass.

MICHIGAN

Detroit Refrigerating Co.,
2030-2040 Howard St., Detroit, Mich.
Grand Trunk Railway Terminal and Cold Storage Co.,
Ferry Ave. and Roby St., Detroit, Mich.

MINNESOTA

Booth Cold Storage Co.,
300 N. 5th St., Minneapolis, Minn.
Bridgeman-Russell Co.,
1100-1116 West Michigan St., Duluth, Minn.
Central Warehouse Co.,
University and Pillsbury Aves., St. Paul, Minn.
Duluth Terminal & Cold Storage Co.,
Duluth, Minn.
The Merchants' Cold Storage Co.,
300-306 Third Ave., No., Minneapolis, Minn.
Minneapolis Cold Storage Co.,
71-89 West Island Ave., Nicollet Island, Minneapolis, Minn.
Minnesota Refrigerating Co.,
410-412 First St., North, Minneapolis, Minn.
Northern Cold Storage & Warehouse Co.,
7th Ave. W. & Railroad St., Duluth, Minn.

MISSOURI

Booth Cold Storage Co.,
1220 N. Main St., St. Louis, Mo.

Carthage Ice & Cold Storage Co.,
Carthage, Mo.
Federal Cold Storage Co.,
1800 North Broadway, St. Louis, Mo.
Mound City Ice & Cold Storage Co.,
S. W. Cor. 9th & Branch St., St. Louis, Mo.
United States Cold Storage Co.,
500 East Third St., Kansas City, Mo.

MONTANA

Lewistown Creamery Co.,
Lewistown, Mont.

NEBRASKA

Omaha Cold Storage Co.,
801 Farnam St., Omaha, Neb.

NEW JERSEY

Atlantic Ice Manufacturing Co.,
Sixth and Pear Sts., Vineland, N. J.
Monmouth Products & Cold Storage Co.,
1010 Corlies Ave., Asbury Park, N. J.
Seaboard Terminal and Refrigeration Co.,
Monmouth, Coles and Twelfth Sts., Jersey City, N. J.
Union Terminal Cold Storage Co., Inc.,
12, 13th & Provost Sts., Jersey City, N. J.

NEW YORK

Brockport Cold Storage Co., Inc.,
Brockport, N. Y.
Bronx Refrigerating Co.,
520-536 Westchester Ave., New York, N. Y.
Brooklyn Bridge Freezing & Cold Storage Co.,
109 Cliff St., New York, N. Y.
Buffalo Cold Storage Co.,
101 Columbia St., Buffalo, N. Y.
Central Warehouse Corp.,
Colonie & Montgomery Sts., Albany, N. Y.
The Fairmont Creamery Co.,
197 Scott St., Buffalo, N. Y.
Fairport Storage & Ice Corp.,
Fairport, N. Y.
The Fulton Market Refrigerating Co.,
307 Water St., New York, N. Y.
Growers Cold Storage Co., Inc.,
Waterport, N. Y.
Kings County Refrigerating Co.,
30 Hall St., Brooklyn, N. Y.
The Lyons Cold Storage Co., Inc.,
Box 69, Lyons, N. Y.
The Manhattan Refrigerating Co.,
525 West St., New York, N. Y.
Middleport Cold Storage Co., Inc.,
P. O. Box E, Middleport, N. Y.
Milton Cold Storage Co., Inc.,
Milton, N. Y.
Morton Cold Storage Co., Inc.,
Morton, N. Y.
Ontario Storage Corp.,
Ontario, N. Y.
Red Creek Cold Storage Co., Inc.,
Red Creek, N. Y.
Rochester Ice & Cold Storage Utilities, Inc.,
55 Canterbury Rd., P. O. Box 940, Rochester, N. Y.
W. M. Storage Corp.,
Marion, N. Y.
Terminal Warehouse Co.,
27th St. & 11th Ave., New York, N. Y.
Terminals & Transportation Corp.,
Fuhrmann Blvd., Buffalo, N. Y.
The Upton Cold Storage Co., Inc.,
38 Cliff St., Rochester, N. Y.
Williamson Storage and Ice Co., Inc.,
Williamson, N. Y.

NORTH CAROLINA

Asheville Ice & Storage Co., Inc.,
Box 11, Asheville, N. C.

NORTH DAKOTA

Union Storage & Transfer Co.,
806-808-810 Northern Pacific Ave., Fargo, N. D.

OHIO

Distribution Terminal Warehouse Co.,
Central Viaduct and West 14th St., Cleveland, Ohio.
The Fairmont Creamery Co.,
239 W. Spring St., Columbus, Ohio.
Great Lakes Terminal Warehouse Co.,
321-359 Morris St., Toledo, Ohio.
Merchants Cold Storage Co.,
Cincinnati, Ohio.
National Terminals Corp.,
1200 W. Ninth St., Cleveland, Ohio.
The Sheriff St. Market & Storage Co.,
620 Bolivar Rd., Cleveland, Ohio.
The Terminal Cold Storage and Ice Co.,
20-40 Eaker St., Dayton, Ohio.

OKLAHOMA

Tulsa Cold Storage Co.,
P. O. Box 2217, Tulsa, Okla.

OREGON

Chas. Feller, Inc.
Marshfield, Ore.
Klamath Ice & Storage Co.,
P. O. Box 210, Klamath Falls, Ore.
Northwestern Ice & Cold Storage Co.,
73 S.E. Washington St., Portland, Ore.
Terminal Ice & Cold Storage Co.,
320 N.W. Hoyt St., Portland, Ore.
Terminal Ice & Cold Storage Co.,
990 N. Front St., Salem, Ore.

PENNSYLVANIA

Consumers Ice and Coal Co.,
Plum and Ice Ave., Lancaster, Pa.
Greencastle Ice & Cold Storage Inc.,
Greencastle, Pa.
Standard Ice Co.,
1362-1374 River Ave., North Side Station, Pittsburgh, Pa.
Union Storage Co. of Erie,
1501 German St., Erie, Pa.

TENNESSEE

Arrow Transfer & Storage Co.,
1208 King St., Chattanooga, Tenn.
Atlantic Co.,
Nashville, Tenn.

TEXAS

Central Power and Light Co.,
Box 1029, Harlingen, Tex.
Maas-Morgan Warehouse, Inc.
Houston St. at McKinney Ave., Dallas, Tex.

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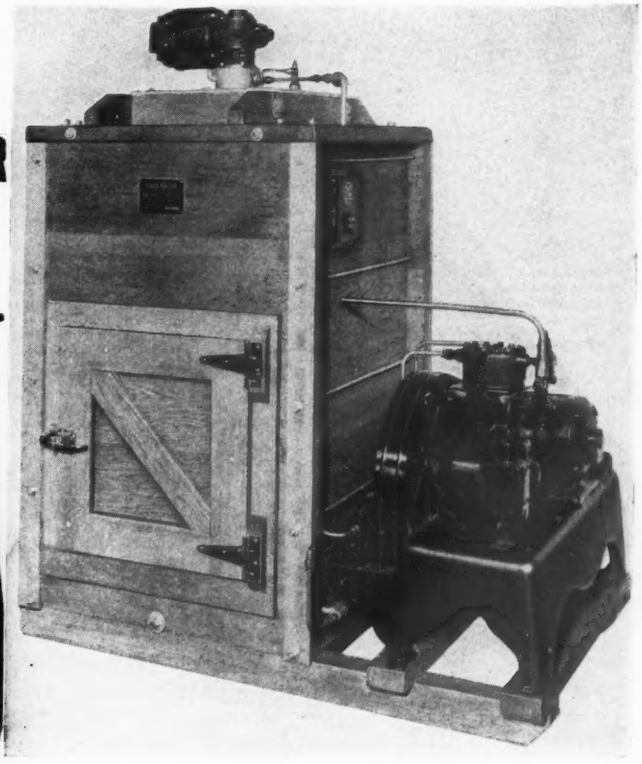

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The New Vilter ½ Ton PakIcer is complete with Compressor, Storage Bin and Icemaking Unit. Merely connect it to Water and Power, snap the switch and in 20 minutes you have Ice ready for use. Requires floor space of only 3 ft. by 5 ft.—6½ ft. high.

Vilter PakIce costs much less than any other form of packing ice. It handles easier, lasts longer, offers more certain protection to delicate foods, is softer, without the sharp points and damaging lumps of crushed ice. Vilter PakIce Units also available in capacities of 1-ton, 2½-tons, 5-tons and up to 30-tons.

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The Vilter Mfg. Company
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Amount of Ice used Daily..... **Annually**.....
Water: Temperature..... **Cost**.....
Power: Volts..... **Ph.**..... **Cycle**.....
Cost per K.W.H......
Present cost of Ice per ton.....

Name .....
Address .....
City, State .....

Merchants Cold Storage Co., Inc.,
407 W. Lancaster Ave., Fort Worth, Tex.
Texas Ice & Refrigerating Co.,
Fort Worth, Tex.
United States Cold Storage Co.,
1114 Wood St., Dallas, Tex.

UTAH

Western Gateway Storage Co.,
390 W. 24th St., Ogden, Utah.

VIRGINIA

Atlantic Co.,
P. O. Box 1459, Norfolk, Va.
Newport News Refrigerating Plant,
P. O. Box 888, Newport News, Va.
The Richmond Cold Storage, Inc.
412 North 18th St., Richmond, Va.

WASHINGTON

American Ice & Cold Storage Co.,
Pier 2, Everett, Wash.
The Arctic Co.,
116-124 W. Pacific Ave., Spokane, Wash.
Diamond Ice & Storage Co.,
Western Ave., and Union St., Seattle, Wash.
Pacific Refrigerating Co.,
2515 Jefferson Ave., Tacoma, Wash.
Seattle Ice Co.,
2200-16 First Ave., So., Seattle, Wash.
Spokane St. Terminal,
Port of Seattle, Seattle, Wash.
Tacoma Ice Co.,
S. 26th & Holgate St., Tacoma, Wash.
Washington Ice & Cold Storage Co.,
2000 Alaskan Way, Seattle, Wash.
Whatcom County Dairymen's Assn.,
Bellingham, Wash.

WISCONSIN

Atlas Warehouse and Cold Storage Co.,
P. O. Box 22, Green Bay, Wis.
Northern Wisconsin Produce Co.,
1306-24 Clark St., Manitowoc, Wis.
Terminal Storage Co.,
100-112 West Seeboth St., Milwaukee, Wis.
The Wisconsin Cold Storage Co.,
344 E. Florida St., Milwaukee, Wis.

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3 WAREHOUSES 3
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330 WEST 42nd STREET NEW YORK, N. Y.

Why FEAR *the Consumer Co-Op?*

By IVAN C. MILLER
Distribution Editor, FOOD INDUSTRIES

IN any aggregation, whether of people, businesses, or nations, some advocate change, some resent change, and some accept the *status quo* complacently. This group thinking is not rigid but plastic. It shifts with time. When retailing was invaded by the chain store system, independent retailers wanted no changes thrust upon them. Now, the chain stores are rebelling against changes which the independent retailers are attempting through legislation to thrust upon the interstate chains. Neither the chain nor the independent welcomes the changes the super-markets are forcing. Only the supermarkets are temporarily complacent.

Senator Wright Patman, backed by the independents, in his broadcasts and speeches, advocates a change in the order of retailing through his proposed chain store tax bill. Rebuttals, both oral and in print, defend the change and condemn discriminative legislation and confiscatory taxes. The desire of the consumer co-op is probably for the *status quo,* in spite of the fact that several prognosticators, including Paul H. Nystrom, professor of marketing at Columbia University, have predicted the rise of the consumer cooperative movement if chain stores are driven out of business.

Regardless of whether taxes of the type proposed by Senator Patman are right or wrong, fair or unfair, there remains an "if"—"if the chain stores are driven from business." The legislation intended to crush the Standard Oil Co. may have handicapped Standard Oil, but did not crush it. The legislation intended to throttle the leading meat packers inconvenienced them but did not destroy them. Dismembering business by law not infrequently has the same effect that pruning has to a bush. The bush bears more fruit. But "if" the chains are driven from business and "if" the consumer cooperative movement does grow, what then?

The American co-op's past history and present status may serve as an index to its future potentialities. The first consumer cooperative in this country was established in 1845 to purchase and distribute household supplies among its members. According to a survey of the Department of Labor that one store in 1845 had multiplied by 1936 to 3,600 retail associations, operating in many fields of distribution and service. This survey of the Department of Labor, which represents approximately 80 per cent of the 1936 sales volume of all retail cooperative associations, reports 259 cooperatively operated grocery stores in this country with a sales volume of $11,612,900.

The development of the consumer cooperative movement is slow moving. It requires years for the average consumer cooperative to develop into a sizable institution. The Department

(*Turn to page 32*)

Food DISTRIBUTION

Spur for RETAIL SALES

Many tests have proved that posters made from the food pages of the woman's magazines swell retail sales

THE INSTITUTE HAS PLANNED SOME
Budget meals
THAT WILL PLEASE YOUR FAMILY—AND KEEP THEM FIT!
SAY DOROTHY MARSH AND JULIA HOOVER OF THE INSTITUTE STAFF

GOOD HOUSEKEEPING: Full color page which can be used for increasing sale of frankfurters, tomato sauce, lettuce, cheese and ingredients for making corn bread.

McCALL'S: Full color spread suitable for promotion of ice cream, cake-making ingredients, raw sugar, chocolate syrup, candy and coffee.

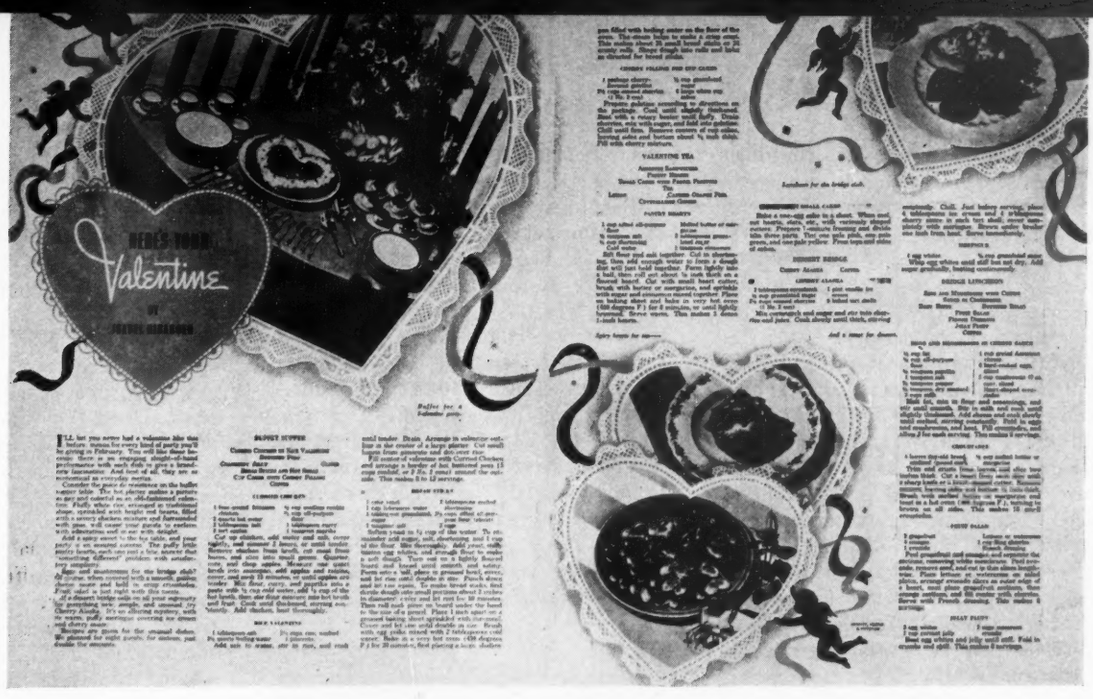
PICTORIAL REVIEW - DELINEATOR: Two color spread with recipes for Valentine party dishes to be made from chicken, rice, peas, mushrooms, gelatin, canned cherries, fruit and ingredients for making pastry.

WOMEN'S HOME COMPANION: Two color spread on Vitamin A, useful for stimulating sale of market, canned or frozen yellow-colored and green leafy vegetables.

LADIES' HOME JOURNAL: Full color spread for promoting sale of ham and eggs, frozen or canned peas and corn, tomato juice, gelatin, cherries, apples and corn bread.

Good Housekeeping food features for February

McCall's features these food pages for February



Pictorial Review-Delineator spread for February food pages

February food spread in Woman's Home Companion

February Ladies' Home Journal food pages

of Labor reports that the consumer cooperative has "developed in a series of up-and-down movements corresponding roughly (but in reverse order) with prosperity and depression."

It has taken many years to develop 259 consumer cooperative groceries with an average membership of 159 families each, and total annual sales volume of $11,612,900. Compare this with the growth of locker plants in the few years they have existed and with their estimated sales volume. Then compare the two methods of distribution!

Estimates of the number of locker plants in operation vary from 1,500 to as high as 4,000. New locker plants are reported to be opening at the rate of between 25 and 50 per month. On the average, each locker plant supplies approximately 300 families with a large portion of their annual perishable foods. This places the number of families served by locker plants at between 450,000 and 1,200,000. Each family, on the average, depends on the locker plant for a source of supply of food, the yearly retail value of which varies somewhere between $200 and $400 per locker family. The retail equivalent of the food stored in locker plants, according to these estimates, varies between $100,000,000 and $400,000,000., a staggering attainment in such a short span of time.

The economic plan on which the consumer cooperative and the locker plant operates is very different. Unless boycotted by grocery product manufacturers, retail grocery cooperatives purchase their supplies either direct or through their own cooperative buying association from manufacturers, the same as do any other private label distributors. From the viewpoint of the manufacturer, there is no great difference between the consumer cooperative system and the wholesaler-owned voluntary system or the retailer-owned wholesaler system. All three groups stock and push their own private label merchandise. All three groups buy through centralized purchasing organizations. All three find it advantageous and do stock national brands to satisfy the demands of regular customers and to attract additional trade. There is one difference in the method of merchandising. Although the consumer cooperative monthly provides members with lists of goods stocked and list prices, the cooperative does not advertise by the same method nor through the same media as do the other two groups.

The modern Co-op. stocks an assortment of national brands, but like most retailers pushes its own private labeled merchandise.

There is one other outstanding difference between the consumer cooperative system and the other system —the systems of the independent, chain or super-market. The cooperatives sell at the "going" price. They do not feature loss leaders nor attempt to meet this type of competition with price concessions. It is true that some of the most modern grocery cooperatives feature specials to meet competition. These are offered at prices near costs, not below, and are not advertised. When specials are offered it is the national brands which are featured —not the private label "co-op" brand.

If the consumer cooperative movement should flourish and if consumer cooperative grocery retailing should become much more widespread, it will nevertheless be a long time before the consumer cooperative can have anything more than a policing effect on grocery retailing. Even though the co-op movement expands manyfold, there should be no great repercussions on the food manufacturer. Consumer cooperatives, theoretically at least, demand quality. Should they become prolific, they would minimize at least one of the evils of the present distribution system—loss leader selling. In practice, if not in conception, consumer cooperatives attempt to bridge or supplant the manufacturer only when boycotted from an adequate source of supply. The locker plant development is based on a different practice, a different conception.

The locker plant, as operated at present, bridges the gap between producer and consumer in most cases and bridges the gap between wholesaler and consumer in others. The retailer in all cases is eliminated.

"Class Legislation" is frequently abortive. Economic trends are certain. Both the chain system and the independent system may have more to fear from economic trends set in motion by the locker plant development than from regulatory or class legislation. Food manufacturers also have reason to watch alertly each development in this trend.

The Madison, N. J., Consumers Co-op. recently introduced self service, not alone to reduce operating costs, but also because customers favored the self-service method.

Food DISTRIBUTION

Merchandising Hints

AND HURDLES

It All Depends

"A NATION-WIDE SURVEY made by the Psychological Corporation of New York for the American Can Co. shows that in November, 1938, 40 per cent of all families interviewed were buying beer for home consumption as compared with 34 per cent of all families interviewed a year ago, a gain of 17.5 per cent during the year.

"Of those families in November, 1938, who bought beer for home consumption, 25.4 per cent are purchasing canned beer, as compared with only 23.8 per cent of a smaller number of families buying beer for home consumption a year ago, an increase of 25.3 per cent in canned beer purchasers."—From a survey made for American Can Co.

"While bottled beer outsells canned beer in New York almost 2 to 1, there is a wide variation among the sales volume of different brewers, according to a study of canned and bottled beer sales in stores here just completed by the Research Department of the *New York Times*. Some 260 stores with beer licenses had weekly sales of 157,265 bottles of beer as against 84,094 cans."—From the *New York Times*.

What's in a Name

THE AMERICAN BUSINESS MAN is an organization man. Throughout the year he sits through weekly and monthly meetings of trade groups and associations and of business men's groups, Kiwanis, Rotary and Lions Club. Then he attends the national conventions of his trade association or industry group and sits through weeks of speech-making, hoping to find throughout the year one precious little gem. Those business men who attended the AGMA convention in New York in December found and carried away with them a gem in the address of Mrs. Wilbur E. Friebley, president of Chicago Housewives League, past-president of Housewives League of America. She said, speaking of Mrs. Consumer, "What she would like is sufficient general knowledge upon which to base her choice, such as a simple label—containing verbs, not adjectives—that enables her to make an intelligent decision for the amount she has to expend. The criterion for every product is, what is it? What can be done with it? What is the price? These simple questions are followed logically in her mind by—can we afford it? Is it labeled as to content, weight, etc.? Who is back of it? Mrs. America can be sure of one thing and is realizing this—that if the manufacturer is ashamed to put his name on a product and stand back of it, then she should be hesitant to invest in what is obviously a gamble. No advertisement, however attractive, can build up consumer acceptance for any product unless the product fulfills the expectation and is identified by a reputable name. Manufacturers must assure Mrs. America that their product is worthy of her acceptance, not by price standard alone, but by a simple presentation of its contents and use, backed by their business reputation."

Since good old Rover has moved from the barnyard into the parlor and had his name changed to Marmaduke, he can no longer gnaw the carcass of the Christmas fowl. He may, nevertheless, be remembered. Spratt's Patent, Ltd., Newark, N. J., and Austin Dog Bread & Animal Food Co., Chelsea, Mass., provide Marmaduke with Christmas stockings filled with dog delicacies.

Food
DISTRIBUTION

Balance and Counterbalance

THE MODEL FOOD AND DRUG LAW, which is offered as a pattern on which the states may formulate state food and drug laws, suggests provisions for compulsory grade labeling. Shortly before the release of the model food and drug law, the American Management Association, sponsoring organization for the competition for the I. D. Wolf package award, announced a new classification for competition, which provides for an award for the "package most effectively displaying specific buying information about the merchandise of greatest help to the consumer at the point of sale."

AGMA's Parade of Progress

THERE HAVE BEEN many promotional campaigns to stimulate the sales of individual food products, viz., candy, milk, canned salmon, canned peas, canned California peaches and canned sour cherries. Last year witnessed the first national promotion of all grocery store products during National Brand Week. The results were so gratifying that the promotion is to be repeated again this year through AGMA's Parade of Progress.

AGMA suggests that during this promotion period (Feb. 1 to May 1), its members cement their relationships with wholesale, retail and institutional distributors. Particularly does AGMA suggest that during this period its members strengthen their relationship with consumers.

Members are encouraged to develop the theme of progress by presenting the growth and development of plant and factory and the progress in employment. For the consumer, members are encouraged to emphasize the volume of production, improvements in packaging and improvements in distribution. They are also urged to emphasize the improvement in the standard of quality of product, indicating the improved usefulness to consumers, the greater convenience of modern products and the greater inherent quality.

Probably the most significant suggestion of AGMA to its members is the suggestion that guide tours be conducted through member plants. Consumer tours through the plants of AGMA members may not contribute greatly to increased sales during the duration of the 1939 Parade of Progress, but the consumer tours will, if retained as a part of a permanent program, build a consumer good will which will yield profits for years to come.

Orchids to Florida Canners

THE FLORIDA LEGISLATURE passed a law on June 10, 1937, to protect Florida citrus fruit interests from the competition of "imports" from other states. This statute provides that every label upon any container of canned citrus fruit or juice shall show accurately the state or country in which the fruit or juice was produced. The statute further requires that every container used for citrus fruit or juice produced in Florida "shall have stamped into or embossed upon the tin, glass or other substance of which such container is made" the word "Florida." Only citrus products of Florida may lawfully be enclosed in containers bearing the name "Florida."

A group of Florida canners challenged, by suit, the validity of this law upon the grounds that the statute violated the state constitution and also the commerce clause of the Fourteenth Amendment of the Federal Constitution. These manufacturers applied for an interlocutory injunction. The case after dismissal was appealed. The U.S. Supreme Court has ordered the case back into the District Court for trial.

In recent years many states have, through various types of legislation, raised "tariff walls" to protect local commerce from the competition of other states (FOOD INDUSTRIES, Dec. 1938, pp. 696).

The Florida statute contains a legislative finding that "certain persons, firms and corporations in the State of Florida" had engaged in the practice "of deceiving customers into the belief that non-Florida canned citrus products had been produced in Florida,... to the injury and detriment of the producers and canners of citrus fruit and citrus juices in the state of Florida," and concluded that an effective method to "prevent this fraudulent practice was to require the publication of the truth upon the labels and containers."

At least one group of Florida canners do not agree. This is significant. Florida can consume but a small portion of the output of these canners whose markets are national. Yet stamped or embossed on the containers of all citrus products produced in Florida must appear the word "Florida," no matter in what locality they are sold.

Such legislation is an invitation for reciprocal legislation by other states; such a policy by states is contrary to the Federal policy of the Department of State so aggressively enforced by Secretary of State Hull, for better trade relations between nations.

Regardless of motive, this small group of Florida canners, The Polk Company, Bruce's Juices, Inc., and Holly Hill Fruit Products, Inc., who through suit oppose this legislation, are to be congratulated for a stand which might advantageously be advocated by other food manufacturers as a means of removing state trade barriers and speeding the return to real free trade.

A method used by some states to protect home commerce from the competition from "imports" from other states.

This L.C.L. shipping container is loaded with frosted foods for express delivery.

New Transportation Service

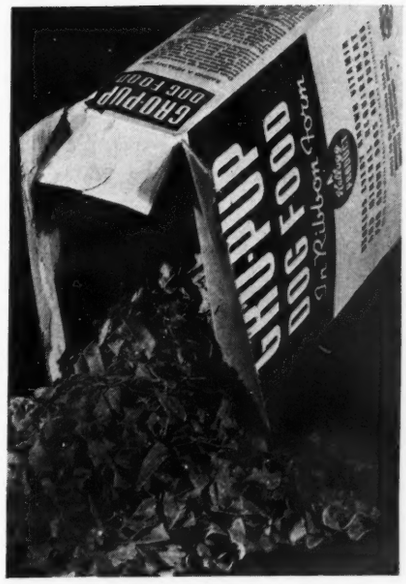
THE PROBLEM of L.C.L. shipment of frozen foods at thermostatically controlled temperatures promises to be speedily solved through the announcement of Railroad Express Agency of a new refrigerated express service for perishables which must be transported at a controlled temperature. The express company has placed in service insulated shipping containers for transporting L.C.L. shipments of perishables which will be collected at shipper's door by Railway Express trucks, travel at express speed and to be delivered to consignee at destination. These shipping containers (Church Shipping Containers, FOOD INDUSTRIES, July, 1938, p. 385) weigh 253 lb. empty, have a cargo capacity for 300 lb. of food and 100 lb. of solid carbon dioxide, the refrigerant employed. Preliminary tests indicate that a charge of 100 lb. of solid carbon dioxide will protect a shipment for more than 72 hours, even when the outside atmosphere averages 90 deg. F. This new L.C.L. service may not only open outlets for perishables heretofore unreached, but also improve the service to present outlets.

Food DISTRIBUTION

New Packages & Products

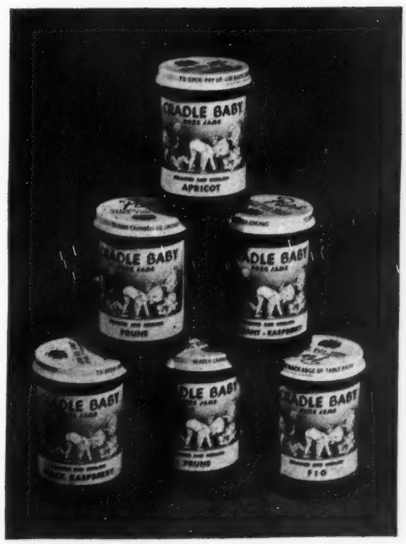
Vitamin for Pups

THE MUSHROOM-GROWTH ERA of the dog food industry is over. The industry has reached that level of competition where "just dog food" is not sufficient to corral a market. Manufacturers engaged in this comparatively young industry are now emphasizing the mineral and vitamin content of their product in response to the demands of a nutrition-conscious public, many of whom consider the good health of their canines almost as important as their own. A new arrival in this market is "Gro-Pup Dog Food" manufactured by Kellogg Co., Battle Creek, Mich., a ribbon-like baked cereal product, in 1 lb. 9 oz. packages. The label suggests that Gro-Pup has a high vitamin and mineral food value required for both grown dogs and puppies.



Six New Jams for Babies

GLASER CRANDELL CO., Chicago, Ill., a recent entrant into the field of baby food manufacturing, a fifteen year old, six million dollar industry, brings mothers of infants a new line of strained and seedless "Cradle Baby" jams. Packaged in 4 oz. glass containers with pry-up tin lids, these jams, in six varieties—prune, fig, grape, black raspberry, apricot, currant and raspberry—claim a maximum retention of vitamins and minerals.



This Ground Pig Went to Market

PORK SAUSAGE in bulk went to market this fall in a premium bowl sealed with a transparent cellulose top which permitted inspection of the contents. "Star" brand pork sausage, product of Armour & Co., Chicago, Ill., an old product in a new and attractive package, went on display and commanded dealer "push" in many retail outlets where sausage had been just another meat, if and when someone asked for it.

New Health Food

ANOTHER ADDITION to the increasing line of health food products retailed for various dietetic purposes is the new "Health House" chocolate malted milk which replaces refined sugar with raw sugar. This malted milk has recently been prepared by the Battle Creek Dietetic Supply Co., Battle Creek, Mich., specifically for use in the health food trade. The new beverage packaged in 1 lb. cans, has an informative label, as do most health foods, listing contents, proportion of each, number of calories and a percentage analysis, indicating approximate food values.

Food **DISTRIBUTION**

Truck Hauler *Delivers* Fresh Meats and *Backloads* Fresh Fish

Refrigerated Bodies and Steam Cleansing Are Keys of Unique N. Y.-N. J. Run

REFRIGERATED trailer bodies cleaned at the end of each trip by hot water and live steam make possible an all-year-round truck run on which fresh meats are delivered from New York City to retail butchers along the New Jersey seacoast and fresh fish are carried back from the same towns to New York City fish markets. These loads in both directions, which are essential to the success of any motorized route, permit the contract hauler to provide food movements which are quicker and cheaper than by any other means of transportation. In addition, the use of refrigerated trailer bodies permits both classes of foods to be kept in the pink of condition from pick-up point to final delivery.

H. W. Brown & Co., Long Branch, N.J., are the operators of the run on which two tractors with semi-trailers and two conventional four-wheeled trucks are employed. The principal route covered extends from New York City on the north to points along the New Jersey coast as far south as Seaside Park. As shown in the accompanying map, intermediate towns such at Matawan, Long Branch, Asbury Park, Manasquan, Toms River, and others are also served.

Outbound from New York City, the vehicles carry fresh meats in boxes to local butcher shops in the towns covered. The meats are loaded between 9 p.m. and 12 o'clock midnight and are delivered by 12 o'clock noon on the following day.

On the return trip, fresh fish packed in ice in barrels and boxes are picked up at various shipping points along the ocean between Seaside Park and Seabright and delivered to the fish markets in New York City. The approximate length of the round trip is 180 miles.

The fish are picked up in the late afternoon and are delivered to the Gotham markets early the following morning within 24 hours after being taken from the sea. The trucks then lay over in New York City until they are loaded with meat on the same evening.

During this interim the entire body interiors including the floor racks, are thoroughly cleansed with hot water and live steam under pressure. This process entirely eliminates all the fish odors and permits carrying the fresh meats without fear of odor contamination. Occasional loads of fresh fish are taken to Philadelphia, also a large fish-consuming center.

The ability to carry full loads in both directions provides the operator with revenue over the entire route-mileage. This permits him to earn a profit and still quote rates in competition with the railroads and provide a

This is one of the Mack tractors and Statotherm refrigerated trailers employed to haul fresh meats out of New York City to New Jersey shore towns and fresh fish back to New York fish markets within 24 hours of the time the fish are taken out of the sea. The maximum load carried is 22,000 lb. The motorized service rendered is cheaper, quicker, more flexible and delivers the foods in better condition than any other means of transportation. The round-trip mileage of the route is 180. It is covered daily, all year round. Both water ice and dry ice are used as a body refrigerant.

motorized service which is cheaper, quicker and more flexible than any other means of transportation. By the use of refrigerated bodies to be described later in greater detail, both classes of foods are delivered in prime condition in even the hottest summer weather. The run is maintained all year round.

One of the factors leading to the reduced expense to the shipper by means of the motorized equipment is the directness of the movement from shipper to consignee and the consequent elimination of several handlings as when previously moved by rail. Packing expense is also less by motor than by rail.

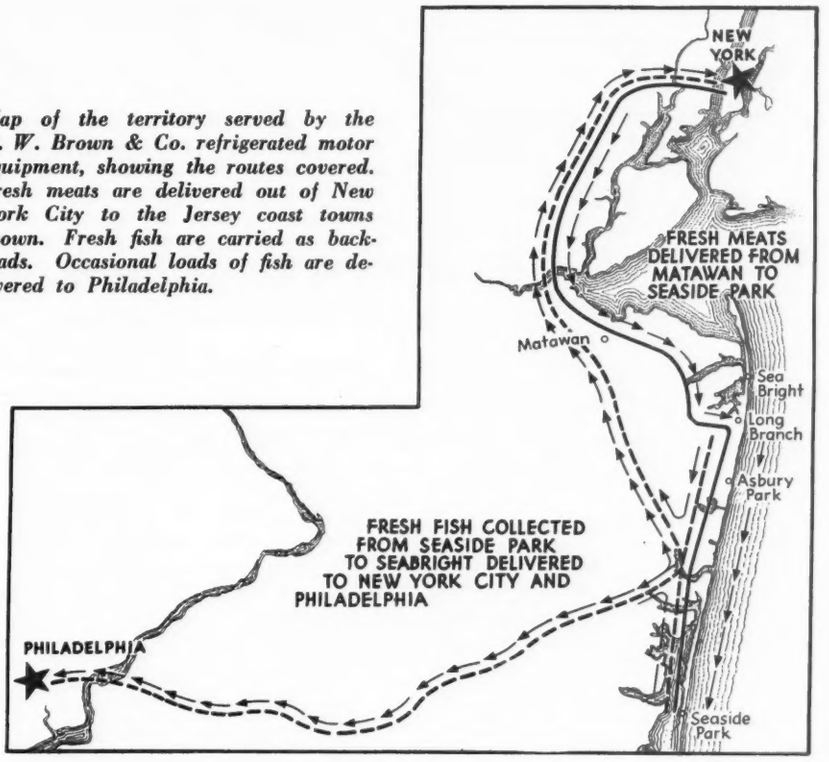
All of the equipment, including tractors, trucks and semi-trailers and bodies used in the work described, were built by Mack Trucks, Inc., Long Island City, N.Y. Both the truck and trailer bodies are insulated.

Dry-Zero Sealpad is the insulating material employed with thicknesses of 5 in. in the roof, sides and ends of each body and 7 in. in the floor. The Dry-Zero insulation was used in the floor in place of the more usual cork in order to save weight. The net payload of each semi-trailer is 22,000 lb.

Either water ice or dry ice may be used as a cooling refrigerant in the bodies. One of the semi-trailer bodies is equipped with the Mack Statotherm system designed to maintain any desired temperature inside a truck or trailer body with an accuracy of plus or minus ½ a degree for any length of haul.

WHILE such a close control of temperature has not been found necessary in the relatively short 90 mile run described herewith, the semi-trailer body shown in the illustration on the opposite page is equipped with the Statotherm system. On the New York City to Seaside Park run, water ice is used as a refrigerant in both directions, keeping the fresh meat at a temperature of between 40 and 45 deg. F. The fresh fish, iced before loading, arrive at the destination at not over the same temperatures.

Approximately 600 lb. of water ice is used on the run to maintain the temperature range mentioned. If dry ice is used, 200 lb. is sufficient for the same temperature range. Occasionally full loads of frozen foods are carried separately from the fresh meats and in such instances, 400 lb. of dry ice is used.



Map of the territory served by the H. W. Brown & Co. refrigerated motor equipment, showing the routes covered. Fresh meats are delivered out of New York City to the Jersey coast towns shown. Fresh fish are carried as backloads. Occasional loads of fish are delivered to Philadelphia.

The Mack company is prepared to furnish the Statotherm system for such operations as require close control of temperatures over long distances. For the benefit of readers of FOOD INDUSTRIES who may have to meet such conditions in the transportation of their food products, the Statotherm may be described as being comprised of three principal parts: the thermostat, the controller, and the blower system installed in connection with a cooling unit to maintain a fixed air temperature throughout the loading space by an intermittent circulation and constant agitation of the air.

The semi-trailer body pictured on the opposite page is equipped with two gas-tight, welded sheet aluminum ice boxes or hoppers which extend across the front of the trailer, one above the other, and which are filled with the refrigerating medium, either wet or dry ice, through the hinged door on the corner of the trailer nose.

A blower draws air along fins on the bottom, outside surface of each ice box or hopper and blows it through graduated air ducts at the top of the body so that it is evenly distributed through the load. The air itself is cooled by its contact with the hopper fins which in turn are cooled by the refrigerant in the hopper.

Other ducts near the bottom of the body serve to draw the air back to the enclosure around the cooling fins where it is again cooled and recirculated.

To interrupt the circulation when sufficient cooling has been effected, the circuit to the blower motor is controlled by a relay switch which in turn is governed by the thermostat. The thermostat consists of a helix or coil of bi-metallic strip, acting on a balanced armature bar. This bar, as it swings in response to minute variations in temperature, closes or opens the blower circuit. This circulates or stops the circulation of the cooling air to maintain the temperature at which the thermostat is set.

In very large or elongated body spaces, a second or agitating blower, operating continuously and not connected by duct to the cooling fin space, may be used to further assist in preventing stratification of the air. In ordinary practice, the load is brought to the required temperature before loading, after which the Statotherm keeps it at a fixed temperature until delivered.

Within their limitations, water ice, salt and ice, eutectics, mechanical refrigeration or solid CO_2 may be used as the refrigerant.

Food DISTRIBUTION

Food Technology

NEW DISCOVERIES & INVENTIONS

FOOD ENGINEERING

Milk Bottles Cracking During Washing

How MILK BOTTLES will stand up against sudden changes of temperature can be tested by taking bottles out of a bath of hot water and plunging them into cold water. The greater the difference in temperature between the baths, the more bottles will crack. Different lots of bottles vary in their resistance to cracking. With some lots a 90 deg. F. temperature difference produces over 50 per cent cracked bottles, while with other lots this difference causes less than 10 per cent to crack. A bottle will not resist cracking forever. Repeated testing as above or repeated washing in a plant washer will eventually cause cracks. When a washer stops there are more cracked bottles than when it runs continuously.

Digest from "Thermal Shock Resistance of Milk Bottles," by C. T. Roland and H. A. Trebler, *Journal of Dairy Science*, 21, 575, 1938.

RAW PRODUCE

Keeping Quality of Potatoes Influenced by Fertilizers

ENZYME ACTIVITY in plants has been studied as part of a program for placing the judging of vegetables on an exact quantitative instead of an empirical qualitative basis. Only vegetables with sound, uninjured tissues keep well in storage, and they must be kept cool. Both of these fundamental requirements are intimately related to enzyme activity. As a specific result gleaned from the general investigation it was observed that a third factor is influential, namely soil composition (amount and kind of fertilizers). This observation was made with potatoes, in which fertilization has a peculiar effect on enzyme activity.

The enzyme known as dehydrase ordinarily becomes increasingly active in stored potatoes, and spoilage finally results. Nitrogen fertilization inhibits this rise in dehydrase activity, for reasons not easily understood in view of the fact that nitrogen fertilization doubles the dehydrase content of the growing potato. At any rate, potatoes from soil well supplied with nitrogen have been found to keep better in storage than those receiving other fertilizers or grown without benefit of fertilizer. It has been suggested that other benefits, aside from improved keeping quality, may result from controlling enzyme activity, but the experimental program has not yet been carried far enough to confirm this idea.

Digest from "Influence of External Factors on Enzyme Activity in Plants," by O. von Schoenbeck, *Forschungsdienst* 5, 77, 1938 (Published in Germany).

TO FOOD TECHNOLOGISTS

Please note what you are missing

DO you want FOOD INDUSTRIES to publish more than the three pages of digest items which has been our custom? We have ready and in type digest items bearing titles such as these for which there is no available space:

Oil from Coffee Grounds without Drying
Ripening Harvested Fruit
Soluble Colloids in Food Liquids
Compressed Wine Yeast
Wrappers That Protect Foods
How Yeast Ferments Sugar
How to Measure Consistency of Butter
Arsenic in Wine
Fats from Sugar
Saturating Sugar Solutions
Froth Control in Yeast Production
Chemical Analysis of Ancient Canned Foods
Vitamin C in Milk
Vitamin Butter Color
Fluorescence Test for Age in Eggs
Crystalline Vitamin B_6
Biochemical Synthesis
Enzymic Activity Increased by Irradiation
Etc., Etc.

QUESTION IS: How many of these digest items do you want to read per month? Please make your ideas known to the editor. L.V.B.

METHODS OF PRESERVATION

Preserving Eggs by Gas Storage

THE GAS STORAGE METHOD for preserving eggs was proposed in France by Lascarde 30 years ago and was gradually developed into a successful wholesale storage system. The largest gas storage units are at Courtrai and Ostend in Belgium. Carbon dioxide, the same gas proposed by Lescarde, is the preferred atmospheric medium to prevent spoilage. It permits a slight degradation of protein in the white of the egg, with thinner consistency as the result, but by preventing any considerable shift of the pH value toward the alkaline side it prevents spoilage by certain enzyme effects which require an alkaline medium.

In present practice the sorted, weighed, fresh eggs are arranged in waxed cartons of 100 eggs each, in wood crates, and placed in hermetically closed metal tanks, 3 or 4 yd. in diameter and sometimes more than 65 ft. long (capacity from about 250,000 to as high as 1,000,000 eggs). The air is pumped out of the tank, to a vacuum of about 10 mm. mercury pressure, and carbon dioxide is pumped in until the pressure in the tank is slightly more than one atmosphere. The temperature is held at 0 to 1 deg. C. (32-34 deg. F.). Fresh eggs, stored in this way, are still entirely edible after seven or eight months. The problem of lowered consistency in the egg white remains to be solved. In other respects the results are eminently satisfactory.

Digest from "Cold Storage of Eggs in a Gas Atmosphere," by W. Rudolph, *Chemiker-Zeitung* 62, 641, 1938 (Published in Germany).

WASTE DISPOSAL

Slaughterhouse Byproducts

DISPOSAL of slaughterhouse wastes is primarily a problem of sanitation, but byproduct value is also an important aspect. In Germany the proper treatment of slaughterhouse wastes is being made a matter of public policy. About 400 recovery plants are planned, geographically distributed to serve the entire German industry. The annual byproduct

capacity will be about 12,000 tons of fat (of a good technical grade, 96–99 per cent saponifiable) and 50,000 tons of feed meal with high protein content (55–70 per cent).

Under this new system of small local recovery plants, the solvent extraction method is not expected to be economically efficient. A recent improvement in the rendering process effects the removal of fat so quickly that there is little or no gelatinization of the non-fatty residue. This greatly facilitates the subsequent drying of the residue and so overcomes one of the greatest difficulties encountered in prior processes. Hence the production of feed meal from the degreased residue is greatly simplified.

Digest from "Utilizing Animal Carcasses," by W. Steinmann, *Fette und Seifen* 45, 338, 1938 (Published in Germany).

BEVERAGES

Solid Lactic Acid

AN IMPROVEMENT in acidulating food and beverage products is disclosed in French Patent 827,258 (granted April 22, 1938, to Wilhelm Bickel of Germany). Lactic acid is the agent, but it is employed in a convenient solidified form so that it can be kept and handled as a powder. Other acids which are themselves solid may be added if desired, for example, tartaric or citric acid. The solidified lactic acid is prepared from the liquid acid (80 per cent strength) by adding calcium carbonate or magnesium carbonate slowly, but not in sufficient quantity to neutralize the acid. The effect can be obtained by using 1 mol of the carbonate to 5, 10 or even as much as 20 mols of lactic acid, no heat being applied during the admixture operation.

New Method of Hop Flavoring

A RECENT GERMAN IMPROVEMENT in the brewing art, as disclosed in German Patent 661,119 (granted June 11, 1938, to Julius Liebelt, Gorlitz, Germany) comprises treatment of the wort with hop extracts in a specified sequence. Hops are boiled with water for a predetermined time and all of the easily soluble portion is added to the wort at once. Only sufficient of the difficultly soluble portion of the hot water hop-extract is added to the wort to give a satisfactory result on boiling, while the remainder of this portion is reserved for later addition, to impart exactly the right degree of bitterness to the beer. After the boiled wort has cooled the last fraction of the hop extract is added, namely the condensate obtained from the vapors given off while boiling the hops in water. This condensate contains the volatile essential oil of hops, which provides the final touch in giving the beer its flavor.

BAKERY PRODUCTS

Staleness in Bread

SUGARS, rightly used, help to prolong the period during which bread retains its freshness. Tests with a number of sugars and other carbohydrates showed that maltose syrup was most effective, followed by glucose syrup. Then follow, in descending order of power to retard the staling process, dextrin, beet sugar, maltose, glucose and the blank test (without added sugar). Soluble starch and potato flour were actually worse than the blank test, giving bread which turned stale sooner than without any special addition. It is interesting to note the difference between a syrup and its crystalline sugar, as illustrated by maltose and glucose, in that the syrup is more potent.

Among the signs of staleness are odor, loss of resilient texture, hardening and changes in water absorption behavior. The progress of staling can be followed quantitatively, but the preferred method depends somewhat on the age of the sample. One of the satisfactory methods in the early stages is based on centrifuging a suspension of the sample. For older bread (3 to 5 days) a method using filtration analysis is recommended, but viscometric and refractometric methods also give good results.

Digest from "Staling of Bread," by A. G. Kul'man and E. P. Balasheva, *Tekhnologicheskie Protsessy i Kontrol Pishchevoi Industrii*, 1938, 175 (Published in Russia).

CANNED FOODS

Purity Factor for Tomato Puree

CANNED TOMATO PUREE varies in consistency from that of the raw juice to a thick paste. Examination of 25 samples from Italy, Hungary and Holland revealed considerable variation in quality as well as in consistency. Properly speaking, puree must be a concentrated (evaporated) product with at least 16 per cent dry matter. Double concentrated puree should have 28 per cent, and the triple concentrated product 36 per cent dry matter. Artificial coloring is not objectionable so long as permissible dyes are employed. The ash content averages about 13 per cent (about 19 per cent in double concentrated puree). Higher ash content may indicate excessive salting.

The citric acid content should be above 7 per cent of the true dry matter, but less than 11 per cent. The natural sugar content (invert sugar) gives some indication as to whether or not the puree was made from sound, ripe fruit. If so, the invert sugar content, multiplied by 100 and divided by the dry matter content, should give a value above 50. This value is called the purity factor.

Digest from "Examination of Tomato Puree," by E. L. Krugers Dagneaux, *Chemisch Weekblad* 35, 703, 1938 (Published in Holland).

Special Apparatus For Opening Cans

THIS IS A SPECIAL FORM of laboratory apparatus for opening tin cans of great age and presumably of very heavy sheet metal. It was devised especially for examining a group of cans of food that were about a century old. Because some of the cans were markedly bulged, and because it was desired to measure internal pressure, take gas samples for chemical analysis, and permit bacteriological sampling without danger of external contamination, an unusual design was developed to meet all these requirements.

In actual test it worked satisfactorily, but the gas-collecting and pressure-measuring apparatus attached to it was not always adequate to handle the pressure of the internal gases in the can. The apparatus is well diagrammed in the article.

Digest from "The Examination of Some Tinned Foods of Historic Interest. Part 2." By T. Macara. *Chemistry and Industry*, 57, 827, 1938 (Published in England).

DAIRY PRODUCTS

Staining of Cans of Pantry Cream

THE DISCOLORATION and corrosion of the inside surface of cans of sterilized cream is due to poor and porous tin plate and to the action of sulphur compounds liberated from the cream in sterilizing. To avoid this staining and pitting of the cans, the following rules should be observed (which would equally apply to evaporated milk).

Use cans of plate with a good, nonporous tin coating. Avoid colostrum or mastitis milk. Use as little stabilizer as possible, sodium bicarbonate being less damaging to the plate than disodium phosphate or sodium citrate.

Carry out sterilizing at a minimum process consistent with sterility. Avoid long storage of the canned product.

Digest from "Discoloration and Corrosion in Canned Cream, Part II," by C. J. Jackson, G. R. Howat and T. P. Hoar, *Journal of Dairy Research*, 8,324, 1937. Also as *Technical Publication of the International Tin Research and Development Council*, Series A, No. 72 (Published in England).

Superheated Skim in Ice Cream

BEFORE HOMOGENIZERS WERE COMMON, superheated plain skim condensed milk was favored, for it increased the body of ice cream mix. Actually, a mix made with superheated skim-condensed is only slightly more viscous than one made with plain skim-condensed. This is true whether the superheated skim has been homogenized or not. Homogenizing it makes it easy to pour and handle. Superheated condensed is of value not because of its heavy body but because of the heat treatment it has received. It gives smoother texture and firmer body in ice cream, but also slightly more cooked flavor.

Digest from "The Viscosity of Ice Cream Mix made with Plain and Superheated Condensed Skim Milk," by Randall Whitaker and L. D. Hilker, *Journal of Dairy Science*, 21, 569, 1938.

FATS & OILS

Soy Beans Oil Coated Before Heat Treatment

AS A PROTECTION against oxidation of oil content, destruction of proteins, and excessive loss of moisture during heat treating of soy beans, the application of a thin film of mineral oil is proposed by Fritz Gössel, Frankfort-on-the-Main, Germany and covered by U.S. Patent No. 2,117,315.

The heat treatment is for the purpose of destroying the raw or "beany" flavor of the beans through conversion of glucosides and liberation of certain volatiles. These results are accomplished best when the beans contain 10 to 15 per cent moisture; are heated to 95—105 deg. C. for 5 to 10 minutes; and the heat is applied indirectly as by means of hot gases flowing through a rotating chamber containing the beans.

Application of the paraffin-type oil is made in the ratio of 2 to 4 lb. of oil per 1,000 lb. of beans by spraying upon the beans as they tumble about in the drum roaster. This oil also increases the heat conductivity of the bean shell. Since the oil is removed with the shell after the cooling of the beans there is no contamination of the flour or oil made from the beans. Batch or continuous roasting may be used. Roasting of the beans through contact with heated gases is equally as important as the use of the mineral oil film in this process. The patent is assigned to General Soya Corporation, New York, N. Y.

SUGAR

Glycerine From Sugar

ANOTHER ADVANCE has been made in the search for methods and materials which would permit profitable production of glycerine independently of soap manufacture. The new invention (German Patent 658,047, granted April 27, 1938 to Karl Lüdecke, Berlin) employs the fermentation method, with sugars as raw material. Its essential novelty lies in the use of *synthetic* sugars, made from formaldehyde. One pound of the synthetic sugar, in a mash containing nutrient salts including sodium phosphate and sulphite, ammonium sulphate, magnesium sulphate and nickel sulphate, will yield about 4 oz. (or a little more) of glycerine when fermented with yeast. An advantage of the new method is that the mash can be prepared directly from the formaldehyde reaction product, after the sugar condensation has been effected. without elaborate operations for isolating the sugar.

MISCELLANEOUS

Quick Method for Testing Grain

THE GERMINATION test for estimating the vitality of cereals before admitting them to storage has been considerably shortened by soaking the test grains before the test. After 3 hours in water at room temperature the same effect is observed in 24 hours as in 48 hours without the preliminary soaking. Attempts to make the test still quicker by using chemical stimulants were unsuccessful, but there is a chemical test which gives excellent information as to seed vitality. This is a modification of the Eidmann test as applied to forest tree seeds. The grains are first subjected to a vacuum and then immersed in a 2 per cent aqueous solution of sodium acid selenite for one day. The test grains to not need to be sectioned, because the external color change suffices to indicate vitality, according to whether the whole grain is stained, or only in localized areas, or not at all. The yeast fermentation test, which was once reliable, is now no longer applicable because the method of propagating yeast has changed and the new yeast does not give the desired effect. The sodium acid selenite test can be correlated with the germination method of measuring vitality, and gives some excellent results in estimating quality for storage.

Digest from "Methods for Estimating the Inner Vitality of Cereal Grains," by K. Mohs, *Vorratspflege und Lebensmittelforschung* 1, 204, 1938 (Published in Germany).

Puffed Foods from Cassava

A FOOD PRODUCT which will puff when fried in deep fat, or steamed, is made from a cassava flour paste. As the invention is disclosed in British Patent 484,468 (granted July 28, 1938, to T. L. Shepherd and assigned to Shepherd's Industries, Ltd.) a small percentage of self-rising flour or other cereal flour (not corn starch) is added. The paste is gelatinized by heat, then cooled, flaked and dried down to 8–12 per cent moisture content.

The cassava flour paste may be flavored with onions, garlic, meat extracts, chocolate, cheese, fish or other flavors, and may be blended with non-starchy foods in great variety, e.g. pectin, casein, lecithin, gluten, gelatin, tomato or carrot pulp, eggs or the like. The dough, flavored and blended as desired, is made up to about the consistency of thick cream, run into trays to a depth of about an inch and steamed about 2 hours. The slabs of gelatinized dough thus formed are turned out on perforated shelves, cooled 24 hours at 10 deg. C. (50 deg. F.), cut into inch squares about 1/16 inch thick and dried 2 hours at 54–56 deg. C. (about 130 deg. F.) The resulting flakes will puff in 4 or 5 seconds in deep fat at 210–240 deg. C. (410–464 deg. F.)

Banana Preparations

AN IMPROVED banana preparation, suitable for use as such or as an ingredient in a variety of food products, is described in British Patent 486,387 (granted Aug. 25, 1938, to W. W. Triggs for Oslo Bananakompani Aktieselskapet, Oslo, Norway). Peeled bananas are ground to a fine pulp, sweetened and intimately mixed in a beating machine with a molten edible fat. For example, 40 parts by weight of banana pulp are sweetened with 15 parts of sugar and well beaten with 40 parts of hardened (hydrogenated) copra (coconut) fat. The product has excellent keeping qualities.

The Plant Notebook

How to Prepare for Floods

In many sections of the country the approach of winter brings the threat of floods. Much potential damage which may result from streams overflowing their banks can be prevented if management uses sufficient forethought and does everything possible to minimize property destruction.

While each plant presents its individual problem, a problem that is best handled by analysis of damage done by past floods, there are a number of simple precautions that are applicable to all plants subject to water encroachment. Among these are:

1. Plan for a flood so that in the event it occurs preventative and protective operations will proceed in an orderly manner.
2. Wherever practicable, take steps to prevent water entering the plant through doorways and other openings above the ground level. Provide sand and sandbags to be used in cases of emergency.
3. Guard against water entering basements with retaining walls built around all outside windows and doors.
4. Check over all walls and block any openings through which water may come in. Special points to watch are the entrance openings for pipe lines and electrical feeders.
5. If possible, store all raw and finished process materials in a safe place, well above any prospective high water mark. In any case, there should always be a space between the piles and the floor.
6. See that all floor drains, storm water piping, and sewer lines are protected against back flow of water with check valves.
7. Inspect all unwatering devices such as pumps and siphons, to be sure they are in good condition. Examine check valves on the discharge side of these devices to see if they will hold. Check intake strainers for cleanliness.
8. If a portable gasoline engine driven unwatering pump is available make it ready for quick use and have an ample supply of fuel on hand.
9. Make arrangements for the quick removal of motors and other equipment particularly susceptible to damage by water, should this step become necessary.
10. Provide facilities for drying out machinery and materials which may have become wet.
11. See that hose, brooms, etc. are on hand to speed up removal of dirt which may be carried into the plant if the waters get out of control.
12. Provide an emergency lighting system to be used in case of failure of the normal power supply. If possible, have enough generating capacity available to supply your pumps.
13. See that all tanks, which might be floated off of their bases or for that matter lifted bodily out of the ground, are securely anchored.
14. Have a boat available to insure a means of entering and leaving the plant.
15. Remove to a safe place, or fasten securely, all equipment and supplies stored in the plant yard which may be carried away. This includes outbuildings and similar semi-permanent structures.—S. H. COLEMAN, *Roanoke, Va.*

Avoiding Foreign Dusts in Grinding Mills

Grinding mill construction which completely eliminates foreign dust particles from the grinding of mustard seed, has recently been installed by Charles Gulden, Inc., of New York City, manufacturers of Gulden's Prepared Mustard.

Originated by Mr. Fred Flohr, head miller at the Gulden plant, the improved equipment makes it possible to remove to a separate sharpening room both of the stones between which mustard seeds are ground. In conventional mustard mills, one stone is permanently affixed to the mill. This necessitates its being sharpened where the mustard is ground and always creates a certain amount of dust on the floor. While mustard millers have long recognized the objections to this condition, it has remained for Mr. Flohr to devise a construction which permits sharpening both stones in a separate, enclosed room. The result is a degree of cleanliness never before attained in the manufacture of mustard.—C. B. DONOVAN, *New York, N. Y.*

Electric Eye for Sorting Rice

A plant has been installed in Great Britain, controlled by a photoelectric cell, to get rid of all rice grains that are not perfectly white. Since the difference between one quality of rice and another consists mainly in the proportion of discolored grains present, and since hand-sorting has never been commercially practicable, the new process may have far reaching effects.

The machine is built up of identical units, each about as large as a portable phonograph. The one now working in London consists of ten units. The whole machine is run from a standard electric light socket, and for every ton of rice sorted it consumes about 4.5 kw.-hr.

The ten-unit installation sorts from 8 to 10 tons of rice a week. Rice passes through each unit at the rate of 100 grains a second. They are fed from the hopper through a tube which, by rotating slowly, delivers them in an even stream to the feeder.

Nine different types of feeder were tried and high-speed photographs were taken to discover how the rice behaved in each. The feeder finally decided on is a pair of rapidly revolving metal disks, with a spiral groove between them. Centrifugal force carries the grains from the center to the rim of the disk by way of the spiral groove. In doing so it arranges them the right distance apart and all pointing the same way. The design of the spiral groove is most intricate. The groove could not be cut by hand with sufficient accuracy, and no machine in existence could produce it.

The grains emerge from the feeder in a single line at a speed of 5 ft. per second, and pass under the electric eye. The perfect grains shoot straight forward into a tube, which leads downward into a sack. Discolored grains send through the photoelectric cell an electrical impulse, which brings into action a jet of compressed air. The jet, passing through a slit narrower than a sheet of writing paper, hits the offending grain and sends it spinning downward into another receptacle. Between the putting on and off of the jet of air about a thousandth of a second has elapsed. This period is so brief that a dark spot on the tail of one grain will operate the photoelectric cell and put the air on and off before the following grain comes within range.

Each unit has only two moving parts, the rotating tube and the feeder. The only adjustment is made by turning a pointer on a scale which corresponds with the degree of whiteness desired in the sorted grains. A full-sized installation of 250 units is now under construction.—C. H. S. TUPHOLME, *Farnham, England.*

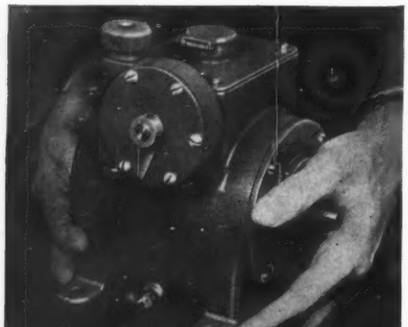
Food Equipment News

REVIEW OF FOOD PROCESSING EQUIPMENT, ACCESSORIES, AND SUPPLIES

Variable Speed Transmission

GRAHAM TRANSMISSIONS, INC., 2711 North 13 St., Milwaukee, Wis., has brought out new models of its variable speed transmission. This speed transmission is designed to keep the drive pressure automatically in proportion to both load and speed, maintaining full torque all the way to zero speeds. It transmits full motor power over a range of 4 to 1 and gives speeds in infinite steps from maximum to zero. Speed is adjustable, either stationary or running.

The operation of this new transmission is based on the principle of a ring of fixed diameter in contact with conical rollers, the speed ratio depending on the ratio of the diameter of the ring to the diameter of the rollers at the point of contact.



Variable speed transmission

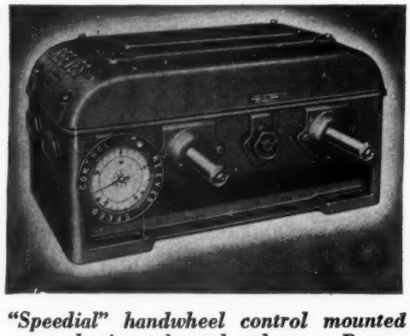
Speed is easily changed, either manually or automatically. Worm control is standard, but lever control is available when desired. The transmission is made in two styles: motor built in, or coupled. Sizes are from 1/6 to 15 hp. The model shown in the accompanying photograph is 5 x 8 in. in overall dimensions.

Protective Paints

METAL PROTECTIVE PAINTS are being produced by Sherwin-Williams Co., Cleveland, Ohio. Called "S-W Kem-Metal Protective Paints," these paints include "Kem-Kromick primer," red lead primer and "Kem-Elastic" paint. Advantages claimed are complete exclusion of water and gases from the metal protected, great durability, and good appearance.

Speed Control

"SPEEDIAL" is the name of a handwheel control for variable speed transmissions, made by Reeves Pulley Co., Columbus, Ind. This handwheel control can be mounted in place of the regular handwheel and dial type indicator on Reeves variable speed equipment. It is said to give a more accurate indication of speed settings than any other indicator available.

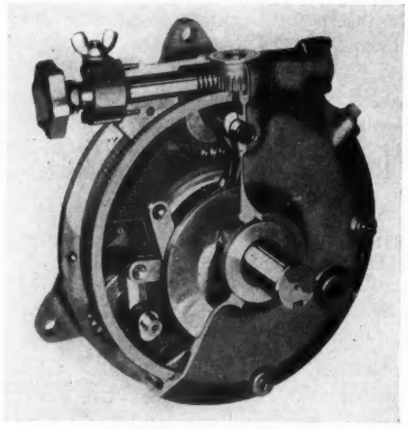


"Speedial" handwheel control mounted on a horizontal enclosed type Reeves transmission

Variable Speed Control

MORSE CHAIN Co., Ithaca, N. Y., has developed a variable speed control mechanism for governing the speed of output shafts through an infinite number of variations within the range of the unit. With the input shaft operating at the recommended speed of 180 r.p.m., this control can be adjusted by a hand set to deliver any speed from 1½ r.p.m. to 40 r.p.m. on the output shaft.

The cut-away view shows the construction of this control. The input shaft is constructed with an integral cam. Operating against this cam are the rollers. From the rollers, the driving action is transmitted through links to clutches. Three Morse high torque clutches are the moving members, taking the movement from the linkage and cams. These clutches operate with a ratcheting movement, rotating the pinion gears. These gears, in turn, drive the mating gear, which is integral with the lower speed shaft.



Cut-away view of variable speed control

Steam Jet Ejectors

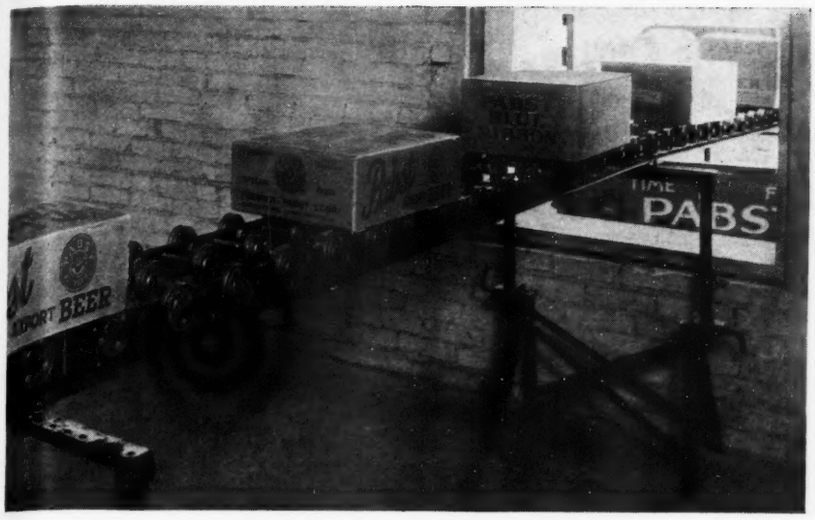
WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J., is making a line of improved two-stage, condensing type, single and double element steam jet ejectors. These are useful in processes where valuable volatile constituents entrained in gases being compressed can be recovered by condensing in the inter and after condensers of the injectors. They can also be used with barometric jet type inter and after condensers in industrial process work.

Wheel Conveyors

FOR HANDLING CASES, boxes, cartons and similar containers, Standard Conveyor Co., No. St. Paul, Minn., has developed 3-row—2-rail wheel conveyors, as shown in the accompanying photo.

This conveyor is available in sections, for every installation. Sections are straight and curved, are equipped with simple coupling devices, and have metal "horse" supports.

A staggered arrangements of the three rows of wheels characterizes the conveyor. The outside wheels are



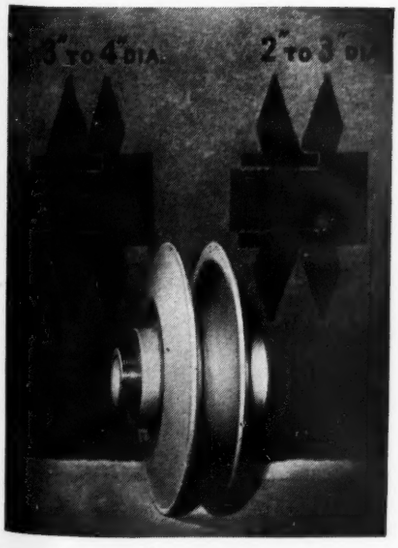
Wheel type gravity conveyor

mounted opposite each other on the outside of the rails. The center wheels are mounted on through axles between the rails, these axles being placed halfway between the rows of outside wheels. Wheels have ball bearings.

This arrangement provides a carrying bed of closely spaced wheels that will take a carton or case as short as 12 in., as the wheels are spaced 6 in. on centers.

Adjustable Sheave

TEXROPE DIVISION, Allis-Chalmers Mfg. Co., Milwaukee, Wis., is making an adjustable sheave for use with Texrope drives. This sheave has a range of pitch diameter varying from 2 to 3 in., and from 3 to 4 in., by removing the adjustable plate, reversing it and placing it again on the hub, as shown in the illustration. The outer plate, in the position shown on the left, allows the belt to ride high, giving a pitch diameter anywhere from 3 to 4 in. When this outer plate is reversed to the position shown on the right, the belt rides low giving a pitch diameter anywhere from 2 to 3 in. The total speed variation provided for is 100 per cent.



Adjustable Drive Sheave

Corrosion Resistant Coating

AMERICAN CONCRETE & STEEL PIPE Co., 4635 Firestone Boulevard, South Gate, Calif., is making a brushable corrosion-resistant coating called "Amercoat Rapid-Dry" coating. This coating is a quick drying solution that may be applied by spray gun or brush to protect exterior or interior surfaces from corrosive action. It is applied to concrete over "Amercoat Concrete Prime" or to wood or metal over "Amercoat Metal and Wood Prime." One, two or three coats are used, depending upon the service required. The coating is said to resist acids, alkalis and other corrosive agents up to 20 per cent concentration. It is insoluble in salt water or petroleum derivatives.

Counter Control Unit

WAYNE AUTOMATIC RELAY Co., Fort Wayne, Ind., has developed a photoelectric counter unit. This uses a standard mill type lamp, rather than a more expensive light source requiring focusing adjustments and, perhaps, frequent lamp renewals.

The unit is self-contained and has a light louver system to exclude all extraneous lights and a corrected condensing lense to direct the full light energy upon the photocell. On top of the steel case of the unit is an amber light that signals each step of the counter cylinder, guarding against non-operation or tampering.

With this counter, $\frac{3}{4}$ in. separation of parts serves to actuate the counter unit on 110 volt, a.c. or d.c. supply.

Gage Saver

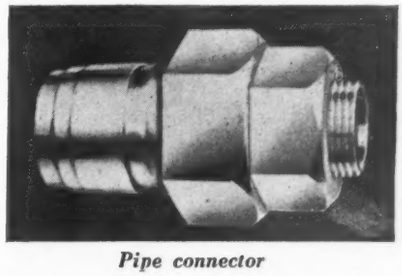
ASHCROFT AMERICAN GAUGE DIVISION, Manning, Maxwell & Moore, Inc., Bridgeport, Conn., has developed a gage saver for use with pressure gages. It is a device for dampening severe pressure pulsations so that the gage pointer remains steady, thus saving wear on the gage movement. It is especially useful for reciprocating pump service, on pipelines, or in other places where pressure pulsations are great.

In addition, the gage saver prevents corrosive material from getting into the Bourdon coil of the gage. It also acts as a safety device, in case overpressure fractures the Bourdon spring.

Pipe Connector

FOR ATTACHING any pipe or fitting to tanks, drums, boilers or other equipment, entirely from the outside, Multi-Seal Mfg. Co., 123 N. Jefferson St., Chicago, Ill., has developed the "Multi-Seal Front Drive Pipe Connector". This device, which permits making connection to a tank without the necessity of getting inside, is made of steel. It can be attached without need for welding, tapping, or riveting.

In the accompanying photograph the part shown at the left is inserted into a hole in the tank. Then, holding the body of the connector with a wrench, the nut at the right is tightened. As this nut is tightened, the connector shank moves up on a taper shank. This expands and compresses the compression cylinder to the inner surface of the hole. The compression cylinder takes the convex curvature of this inside surface. When the tightening is completed, the threaded pipe end at the outside end of the connector is exposed, ready for a pipe connection by a standard union or coupling.



Pipe connector

Just off the Press

BOOKLETS • LITERATURE • BULLETINS

Food Plant Equipment

ALUMINUM EQUIPMENT—"Wear-Ever" heavy-duty and semi-heavy food processing utensils, including kettles and pans, are described in a 64-page flexible-bound bulletin, Catalog No. 66, issued by Aluminum Cooking Utensil Co., New Kensington, Pa.

CANNING EQUIPMENT—Pasteurizing and cooling equipment for canners of juices and other products, under the trade name "Thermo-Roto," are described in a bulletin of Thermal Engineering Corp., Richmond, Va.

COOLING EQUIPMENT—Steam jet vacuum cooling units adaptable within a range of 35 deg. to 65 deg. F., for use in combinations of cooling action and evaporation, degassifying or crystallizing action are described in the leaflet F.8455, by Westinghouse Electric & Mfg. Co., East Pittsburgh, Pa.

FLAME PEELING EQUIPMENT—Operation and application of equipment for peeling potatoes by flame are discussed in a bulletin of Sanitary Food Processing Co., Bayview Bldg., Seattle, Wash.

MAGNETIC SEPARATION EQUIPMENT—Stearns Magnetic Mfg. Co., Milwaukee, Wis., has published Bulletin No. 25 dealing with circular, rectangular and hand magnets, and Bulletin No. 700 describing Type "K" induction separator for concentration of materials of high magnetic reluctance.

MILK EVAPORATORS—Stainless steel milk evaporators, single and double effect, for condensed or evaporated milk plants, are illustrated and described, with specifications in bulletin No. 317, Buffalo Foundry & Machine Co., 1635 Fillmore Ave., Buffalo, N. Y.

MILK PLANT EQUIPMENT—Can and cover washers, weigh vats and weigh cans, and other sanitary creamery equipment are described in a 24-page bulletin and 4-page folder recently put out by Carl Braun, Inc., Canastota, N. Y.

MIXING EQUIPMENT — Portable mixers of the "Lightnin'" type, made by Mixing Equipment Co., Inc., Rochester, N. Y., are described, with specifications and application data, in illustrated bulletin B-65.

PROCESSING KETTLES—Electrically heated kettles for the food industries, and for other processing operations, are described in a recent bulletin of Patterson Foundry & Machine Co., East Liverpool, Ohio.

STEEL EQUIPMENT—A folder of condensed data on stainless steel has been issued by Stainless Steel Division, Smith Steel Foundry Co., 1320 S. First St., Milwaukee, Wis.

Materials Handling Equipment

AIR HANDLING EQUIPMENT—"Fan Systems for Various Industries" is the title of a 32-page illustrated bulletin published by The Kirk & Blum Mfg. Co., Cincinnati, Ohio, dealing with design and construction of pneumatic material handling installations and dust collecting systems.

CONVEYOR BELTS—A 1938 catalog and folder dealing with the application, types and specifications of chain link and flat wire metal conveyor belts for use in food processing industries, has been issued by Cyclone Fence Co., Waukegan, Ill.

MATERIALS HANDLING EQUIPMENT—Five steps in the selection of handling systems including survey, design, proposal, installation, maintenance, and the application of conveying machinery to industry are illustrated in Bulletin 138 issued by Gifford-Wood Co., Hudson, N. Y.

MATERIALS HANDLING EQUIPMENT—Roller chains and attachments for all sorts of conveying operations are described, with specifications, in a 40-page illustrated catalog, No. 65, issued by Baldwin-Duckworth Chain Corp., Springfield, Mass.

ROLLER CONVEYORS—An "Engineers Handbook" of roller conveyors, containing 96 pages of descriptions, illustrations, specifications and data, has been published by Palmer-Bee Co., Detroit, Mich.

SCREW CONVEYORS—Food plant screw conveyors, parts for same, and bucket elevators are among the material handling devices described, with specifications, in Catalog No. 334, general screw conveyor catalog of Chain Belt Co., Milwaukee, Wis.

Packaging and Filling Equipment

FILLING MACHINES — Automatic rotary filling machines for catsup, juices, beverages, and other liquid or semi-liquid food materials, are described in a loose-leaf folder issued by Horix Mfg. Co., Pittsburgh, Pa.

PACKAGING EQUIPMENT — Johnson Automatic Sealer Co., Ltd., Battle Creek, Mich., has issued a series of loose-leaf general catalog sheets describing wrapping, package sealing and closing machines.

PACKAGING EQUIPMENT — Model FA-Q, a wrapping machine with a capacity of 40 to 70 packages per minute is described in a 4-page folder by Package Machinery Co., Springfield, Mass.

SHREDDER—"Silver 19" a device for shredding paper for packing is described in a folder issued by Industrial Shredder and Cutter Co., Salem, Ohio.

Plant Accessories and Supplies

CHEMICAL SPRAY CLEANER — The "Karrick Hydro-Steam Kleaner," a steam operated chemical spray cleaning machine, and Model V-Ges gas fired stationary hot vapor spray cleaning machine are covered by the Clayton Mfg. Co., Alhambra, Cal., in recent bulletins.

DUST COLLECTION—Buell Engineering Co., Inc., 70 Pine St., New York, N. Y., has issued a booklet on industrial dust collectors employing the Van Tongeren system.

FLAVORING—Fritzsche Bros., Inc., 76 Ninth Ave., New York, N. Y., has issued a folder describing "Zimco" vanillin.

INDUSTRIAL LIGHTING EQUIPMENT—"Locklite" reflectors and hoods designed for industrial lighting are described in Catalog Section 61-153 by the Lighting Division of the Westinghouse Electric & Mfg. Co., Cleveland, Ohio.

The Food Industry News

GENERAL NEWS, BUSINESS TRENDS, MEN, JOBS AND COMPANIES • JANUARY, 1939

New Technics in Food Preservation Discussed at Convention of ASRE

Quick freezing of foods and problems in the prevention of food spoilage and contamination held the spotlight at the 34th annual meeting of the American Society of Refrigerating Engineers in New York, Dec. 6-8.

In a paper on "Technological Progress in Frozen Foods," G. A. Fitzgerald, Frosted Food Sales Corp., Boston, stated that locker plants are not likely to offer much competition to cold storage warehouses, nor to commercial frozen foods, in cities. The field of the locker plant will prove to be chiefly rural or semirural. One factor in this will be the difficulty of handling fruits and vegetables in the city locker plant, far from the point of harvest. Mr. Fitzgerald stressed the importance of quality control in the preparation of frozen foods of satisfactory quality. He said quality control of frozen foods is not yet on a basis of standardization, but that vitamin C seems to be one of the best indexes of quality.

Freezing in Latex Bags

Freezing foods in bags of latex composition was described by Mason T. Rogers, of Dewey & Almy Chemical Co., Cambridge, Mass. His company developed its method, Mr. Rogers said, on the basis of French research work and patents described at the food conference at Massachusetts Institute of Technology in 1937 by Maurice Piettre, Director, Institut International du Froid, Paris. The food to be frozen is placed by hand in the bag, which has been expanded by exerting a vacuum on the outside. After filling, a vacuum is exerted on the inside of the bag. Then the end of the bag is wired shut and the whole is dipped in hot water. As a result, the bag shrinks tightly around the food, which is then frozen by any suitable means. Handled in this way, the bag keeps air out, moisture in, prevents freezer burn, but does not insulate the food against freezing. Consumer foods should be stored and sold in the bags. The method is also used for the storage of green hams, in which case, the bags are recovered upon sale of the hams and can be used over again.

M. T. Zarotschenzeff, National Frosted Foods, Inc., New York, briefly reviewed frozen food progress abroad. He stated that true quick-freezing, outside of the United States, is carried out only in one plant in England, and on several French fishing boats. Other freezers, in general, follow the German lead and consider that sharp freezing gives results that are "just as good." In Russia, however, there are several large quick-freezing plants, using the Birds Eye, Z, and other American methods. In addition, the Soviets have developed new methods of quick-freezing, particularly for meats. The Japanese have developed an automatic fish-filleting machine, connected to a quick freezing device, and designed for use on trawlers. The Japanese are also undertaking a large scale quick freezing development for fruits and vegetables, by means of a corporation controlled by the government.

Results obtained by the use of Sterilamps for reduction of bacterial contamination of meats were reported by Prof. Arthur W. Ewell, of Worcester Polytechnic Institute. He reported a survey of 43 installations in walk-in and display cabinets in the Boston area, in which it was determined that 80 per cent were giving satisfactory results, including all but one of 26 large installations. With the remaining 20 per cent, where the value of the installation was doubtful, the report indicated that this was usually because of improper refrigeration, humidity or air motion, or because of poor general housekeeping. Practically all of these unsatisfactory installations were corrected as a result of this survey.

Gas Storage Discussed

The possibilities of gas storage in the United States were discussed by Prof. R. M. Smock, Cornell University, who has been studying the subject for four years. In England, he said, there are some 200 commercial installations which utilize a combination of atmospheric control with refrigeration. In many places an atmosphere of 5 per cent of CO_2 containing 2 per cent of oxygen (balance is nitrogen) has proved excellent for many perishables when supplemented by proper temperatures. Eggs require about 34 deg. F. while certain fruits require 46 deg. F.

Gas storage does not replace proper temperature control but supplements it by conferring a sort of state of suspended animation on the perishable material in storage. Different varieties of fruit must not be carried in the same atmosphere or the ethylene given off from the earlier ripening fruit will vitiate the good results by causing the later varieties to deteriorate far ahead of schedule.

In the United States the added cost of this form of preservation over ordinary cold storage would not pay except in the case of certain pears and apples.

Institute of Nutrition To Be Created by AGMA

In addition to discussing in a practical way the problems of the industry, the members of Associated Grocery Manufacturers of America, meeting in convention at New York, Nov. 28-30, took steps for promotion of industry-consumer and trade relations. Perhaps

RECEIVES AGMA AWARD

Dr. E. V. McCollum was honored by Associated Grocery Manufacturers of America at its recent convention. He received the organization's annual award for outstanding contributions to the scientific knowledge of food. Dr. McCollum, professor of biochemistry at Johns Hopkins University, discovered vitamins A and D. He was also instrumental in translating the story of nutrition out of the language of the laboratory into the language of the layman.

the outstanding action at the meeting was the indorsement of a plan for an Institute of Nutrition and the creation of a committee, headed by Clarence Francis, president of General Foods Corp, to work out the plan. Through this institute the industry expects to do basic scientific research which will render a public service through contribution to better health.

Also important from the standpoint of public relations are the plans announced for the industry's Parade of Progress. This plan goes beyond all previous conceptions of Advertised Brands Week, making that week merely a headliner in a long period of continuous consumer education. Serving as director of this program will be Zola Vincent, assistant to Paul S. Willis, president of AGMA.

On the subject of labor relations, the grocery manufacturers received some pertinent advice from C. S. Ching of U. S. Rubber Products, Inc. The most important thing in labor relations is mutual confidence, he said. "We must not impute to employees or their leaders wrong motives until we are convinced that the motives are wrong. We must approach the matter with an open mind, realizing that there is no permanent answer to the matter of human relations. It is always in a state of flux."

Gerrit Vander Hooning, president of National Association of Retail Grocers, urged the manufacturers to "start talking legitimate profit to retailers . . . not excessive profits, not profits to increase costs to the consumer, but a fair and legitimate profit on all items." Mr. Hooning declared that the association which he represents has charted a course to eliminate loss-leader selling and will not be swayed from that course.

In addition to indorsing the proposal for an Institute of Nutrition, AGMA passed resolutions recommending: (1) Amendment of the National Labor Relations Act to provide protection for employers and employees alike from unfair practices. (2) Uniform state food, drug and cosmetic legislation in harmony with the new Federal Food, Drug and Cosmetic Act. (3) Return to "industrial democracy" and more specifically a condemnation of federal and state legislation which would arbitrarily prohibit or limit "any mode of business" whether "directly or indirectly."

Model Food Law Drafted

In an effort to obtain uniform state legislation covering food, drugs and cosmetics, a model state bill has been prepared by the Association of Food and Drug Officials of the United States. Copies of the model legislation have been mailed to all interested state officials, and it is urged that the bill be introduced in every state legislature meeting this winter. If enacted by the various states, this legislation would provide throughout the country state food, drug and cosmetic laws which not only would be uniform but would be in agreement with, and as effective as, the new Federal Food, Drug and Cosmetic Act, effective June 25.

CONVENTIONS

JANUARY

22–27—National Canners Association, Hotel Stevens, Chicago.
23–24—National Preservers Association, Morrison Hotel, Chicago.
25—National Picker Packers Assn., Palmer House, Chicago.

FEBRUARY

20–22—Associated Retail Bakers of America, Carter Hotel, Cleveland.
21–23—Annual Technical School for Pickle and Kraut Packers, Michigan State College, East Lansing, Mich.

Reduction in Sugar Tariff Not Expected

Despite the appeal of Col. Fulgencio Batista, Cuban leader, further reduction of the duty on sugar is believed unlikely. Secretary Ickes and Secretary Wallace are thought to be in full accord with the Cuban request; they are convinced that sugar production in continental United States is uneconomic. But there is reason to believe that Secretary Hull is not ready to arouse active opposition to his whole reciprocal program by antagonizing senators and representatives from sugar-producing areas. It is possible that he may countenance a public hearing on the subject as a friendly gesture to Cuba, but it is doubted that he has any intention of opening up the trade agreement. If that

CAPITAL VIEWS

REGIONAL LABORATORIES—Non-food activities with agricultural raw material will be the major part of the research work of the four new $1,000,000 regional research laboratories of the Department of Agriculture. But indirect benefits in the development of byproducts of food processing and new outlets for food industry materials, like starch, lactose, etc., can be expected. The new Laboratories will be located at Peoria, Ill., New Orleans, La., Berkeley, Calif., and in the Philadelphia suburban area. Direction will be chemical and chemical engineering which assures major emphasis on processing methods and fundamental scientific knowledge useful to food, as well as non-food, industries.

FOOD AND DRUG REGULATIONS—Department of Agriculture officials expect to announce the new regulations to govern the administration of food industry matters some time during January. The scope of the regulations is expected to follow closely the form published by Food Industries in November (page 628). But account will be taken in the final draft of the hearings and of briefs submitted up to Dec. 10 by those asking modified regulatory practice. The major change in old practices will relate to the means for adoption and enforcement of standards of identity and quality. Most of the "police" work will go on about as under the old law.

ADVERTISING CONTROL—The Department of Justice intends to undertake policing of advertising! This is not true; but it is the inference which most folks drew from the efforts of Assistant Attorney General Thurman Arnold to explain the consent decree in certain auto finance cases involving Ford and Chrysler companies. Hasty denials by the Department staff have not allayed the fear that this zealous executive would like to do this, even though it is perfectly evident that the law gives no such present authority. Later interpretations make it evident that the Department is not expecting to seek such authority; and the apparent attitude of Congress would indicate that they would not get it even if they asked. Food executives are safe, therefore, in interpreting this episode as important only in one thing: Advertising, no matter how extensive, is not likely to be subject to criticism if it is planned to sell goods; but extensive advertising seemingly aimed at the securing of monopolistic control through subsidiaries or affiliates will be closely scrutinized and critical investigation would not be surprising in such cases.

MILK MONOPOLY—The Chicago indictment of a large number of individuals, companies, and some from trade association fields parallels rather closely the petroleum monopoly efforts of the department of Justice. Officials seems to be very confident that they will make a case in the courts. But it is not to be expected in this instance that everyone initially drawn in will be convicted, any more than were all the petroleum folks. A protracted airing of the milk industry's business methods will be expected when the trial date comes.

FOOD RAW MATERIALS—Although Secretary Wallace claims that the recent farmer referenda are in support of AAA programs, most commentators think that repudiation by tobacco and rice votes is more significant. They do not accept the distress vote of cotton producers favoring continuance of quotas as real support. This seems to mean that AAA plans will be henceforth less effective in restricting the supply of raw food materials from the farm. But the ebb of the tide of regimentation has not moved far yet, if at all.

LABOR AUTHORITY—Most news interpretations of the Supreme Court's ruling on the action of NLRB with reference to Consolidated Edison Co. of New York City have stressed the restrictive features of the court opinion. That interpretation seems to neglect an aspect much more important to food manufacturers. The court held that NLRB can control labor matters of this company simply because it sells power to folks in interstate business. On this theory almost every unit for food processing is definitely interested. That conclusion seems to be generally the trend of judicial thinking, implying that Washington will now boss labor policies even for most small local enterprises.

were done it would open the door for further concessions on winter vegetables, tobacco, pineapples and other items. Domestic interests concerned with those products would join with the sugar producers in opposing further concessions and might add to the ranks of those who would upset the whole reciprocal plan.

Three Food Hearings Set

Three hearings under the new Food, Drug and Cosmetic Act have been scheduled for this month. Proposals for establishing definitions and standards of identity for tomato puree, tomato paste, tomato catsup and tomato juice will be considered at a public hearing in Washington on Jan. 16. Another hearing on Jan. 19 will be held for establishing standards of identity, quality and fill of container for canned tomatoes. A third hearing on Jan. 23 will consider evidence for establishing standards of identity for eggs, liquid whole eggs, liquid mixed eggs, frozen whole eggs, dried whole eggs, egg yolk, frozen egg yolk and dried egg yolk. All three of the hearings will be held in Room 3036 of the South Bldg., Department of Agriculture, Washington, D.C.

New Butter Standards Effective on April 1

Official United States standards for quality of creamery butter have been promulgated by the Department of Agriculture, to become effective April 1, 1939. Applying to the grading and certification of creamery butter by official graders of the Department, the standards are to replace tentative ones.

A more exact and simplified system of determining the official United States score of creamery butter is provided by these standards. The range of score is narrowed from the old basis of 75 to 95 points to a new basis of 85 to 93 points. The score-card method of grading has been abandoned. A simple, definite and more direct method of rating each factor—in flavor, body, color and salt—has been substituted. Flavor constitutes the most important element, and factors of workmanship are secondary. The new grades definitely identify and evaluate some 30 flavors with a score rating for each.

Genealogy

In order to make it a matter of annual record, this statement is published every January:

FOOD INDUSTRIES was founded in 1928 by McGraw-Hill Publishing Co. Dr. H. C. Parmelee was its first editor. Dr. L. V. Burton succeeded him and is its present editor. Associated with him are: E. S. Stateler, associate editor (now located in the Chicago office); G. L. Montgomery, managing editor; F. K. Lawler, assistant editor; Ivan C. Miller, distribution editor; and R. S. McBride, editorial representative in Washington.

Construction News

	Pending (thousands)	Awarded Dec. (thousands)	Total Awarded 1938 (thousands)
Bakery	$125	$.....	$738
Beverages	365	80	4,297
Canning and Preserving	100	.....	240
Confectionery	.....	.....	62
Grain Mill Products	75	.....	810
Ice Manufactured	.....	40	400
Meats and Meat Products	400	120	2,058
Milk Products	401	.....	925
Miscellaneous	890	320	5,279
	$2,356	$560	$14,809

Forecast of Action Expected in Congress

Legislative action in the new session of Congress can be expected on certain fundamental subjects affecting the food field, FOOD INDUSTRIES' Washington representative believes. Taxes will have to be tinkered with again, as more money is going to be needed even by an Administration that continues unafraid of tremendous deficits. Tax raising can be expected more than tax adjustment. There is no danger of any important restoration of punitive taxes, as Congress no longer will vote that way.

Monopoly legislation will be very much limited as the Temporary National Economic Committee (monopoly committee) is not nearly ready to make a final report. Some small, but important, features of its program may be drafted in legislation with the intention of enactment in 1939.

Labor regulation will be tightened up and clarified somewhat for the wage-hour unit of labor; but some folks think that the National Labor Relations Board will have some of its activities curtailed and some of its "discriminatory" practices repudiated by Congressional action. Any great retreat is not expected, however, as Congress still thinks that the voters want Uncle Sam to legislate benefits for workers.

Patents will be one subject on which the monopoly investigators are likely to suggest legislation. Well-informed forecasters seem to think that a single court of patent appeals may be established and that some restriction may be placed on the time which patents may remain pending in the Patent Office.

To Spend $15,000,000

Approximately $15,000,000 will be spent by General Foods Corp., New York, in an expansion program now under way. The program includes erection of new factories, modernizing equipment, building ships, enlarging quick-freezing facilities and constructing a new research laboratory.

Delay Wage-Hour Hearing

Hearing on petitions of growers and shippers for relaxation of regulations governing the agricultural field will be held Jan. 9 in Washington. This hearing, originally set for Dec. 14, was postponed first to Dec. 19 at the request of the growers and shippers, who stated they wished further time in which to prepare material for submission, and later was extended on a subsequent request to the final date. It is probable that the hearing will be held at the Hotel Raleigh.

Establishes Foundation

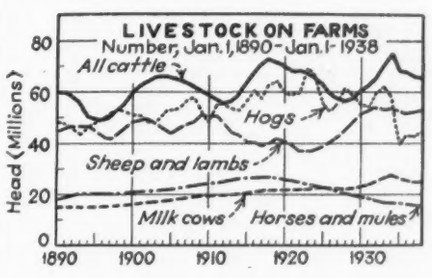
For the promotion of pure research on technological problems in the food industries, Geo. A. Hormel & Co., Austin, Minn., has established a foundation at the University of Minnesota. The company hopes that new uses and values will be found similar to the discovery of synthetic fiber and plastics in other industries. The results of this research will be made available to the entire meat and livestock industry.

Stabilized Employment Advocated by Deupree

"I feel that stabilized employment is one of the great needs of American industry . . . I consider that the most important thing that we have to do in our relationship with employees is to assure them steady work." With those remarks, R. R. Deupree, president of Procter & Gamble Co., prefaced his talk at the annual convention of National Association of Manufacturers, held in New York, Dec. 7-9.

"Back in 1931 it cost us $400,000 to keep the 48-week work plan in operation. But in other bad years we have had to close down our factories, and in 1929-30 we did not close an hour. I think that most experts would agree that stoppage and replacement would have cost us far more than the amount we spent, which was approximately $70 per employee," Mr. Deupree said.

Fair and equal treatment of all who are affected by labor legislation was



asked by R. W. Moore, president of Canada Dry Ginger Ale, Inc., and chairman of the NAM employment relations committee.

In its "Platform for American Progress," NAM urged recognition of the principle that employees who wish to bargain collectively are entitled to do so, through their own freely chosen representatives and without intimidation or restraint from any source. In regard to taxes, NAM expressed the belief that the government should consider the advisability of lowering tax rates as a means of increasing tax receipts.

Ways to Increase Milk Consumption Considered

How to increase consumption of dairy products and to improve relations between the industry and the public were problems discussed at the Eighth Annual Western Regional Dairy Conference at Oakland, Calif., recently.

"We must make known to the consumer how vital to the individual health milk, butter, cheese and dairy products are. An advertising and educational program of an aggressive nature is necessary to bring the scientific facts before the public," declared Dr. C. L. Roadhouse, president. Other dairy industry leaders expressed the same sentiment and are now working on plans to carry out these suggestions.

C. E. Grey, Golden State Co., Ltd., San Francisco, advocated spending more in research work to create new uses for dairy products.

In a practical and inspiring talk on "How Can We Increase the Use of Dairy Products?" William A. Foster, general sales manager of Borden at San Francisco, stated that the industry had two types of problems on its hands: (1) selling present surpluses and taking care of present customers, and (2) building for increased future sales.

Other points brought out by Mr. Foster were: get adults and people past 40 to use more milk; don't neglect present drinkers in planning your educational advertising program; educate the children to continue the milk drinking habit as they grow older; teach that milk is not a substitute for other drinks such as coffee or tea, but to drink both milk and coffee or tea at meals—one for the enjoyment and the other for its food value; sales of foods that use dairy products in their manufacture should be helped and stimulated; go after restaurant business for butter and milk sales; declining use of bread has hurt butter sales, so co-operate with bread companies; develop the good will of your outlets.

Fruit Juice Skyrockets

From a production of little more than 1,000,000 cases in 1929, the fruit juice output has climbed rapidly to about 24,000,000 cases during the last year. This was reported by the Bureau of Agricultural Economics in the November issue of *The Agricultural Situation.*

Year-End Dullness Draws Commodity Prices Lower

With Christmas cheer and New Year whoopee holding the center of the stage, commodity prices drifted slowly down as the year closed. The movement was nothing startling, however, as commodity prices did not register any significant gains or losses during the whole final quarter of 1938.

In spite of this general movement of commodity prices, foodstuffs registered some gains. For the month ending Dec. 17, No. 2 hard winter wheat increased 3 cents per bushel; corn, No. 3, yellow, increased 4½ cents; oats increased 3 cents; barley increased 2½ cents; eggs increased ½ cent per dozen; and cheese went up ¾ cent per lb. In contrast, beef and pork decreased from ½ cent to 1 cent per lb., depending upon the cut; rye decreased ½ cent per bushel; and sugar, coffee, cocoa and cottonseed oil also decreased in price somewhat. Most other important foods were steady.

The *New York Journal of Commerce* weekly index of wholesale prices, on Dec. 17, 1938, stood at 74.7, compared to 75.6 one month before, and equal to the 1938 low for this index, registered first on Aug. 13, 1938. Fisher's index number of commodity prices, on Dec. 17, 1938, was 79.8, compared to 80.4 on Nov. 19, 1938.

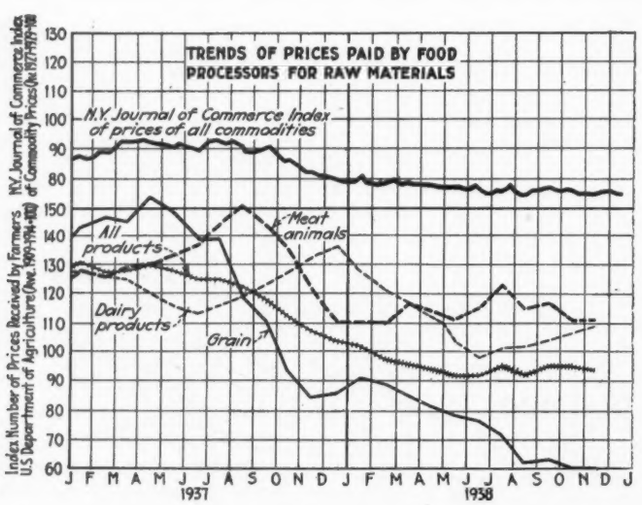
More Forecasts Made For 1939 Crop Yields

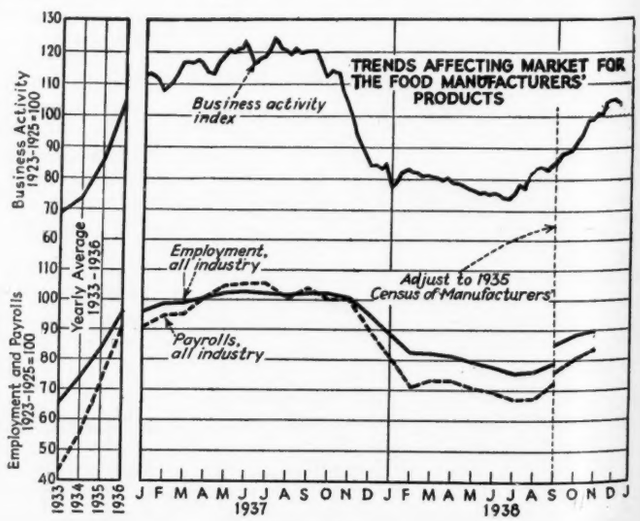
In addition to the crop forecasts for 1939 made by the U.S. Department of Agriculture and given on these pages of FOOD INDUSTRIES for December, 1938, other figures are now available.

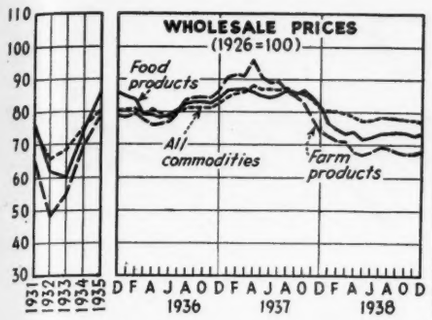
WINTER WHEAT—Private estimators indicated, in December, an expected winter wheat crop in 1939 of 524,000,000 bu., off 165,000,000 bu. from the 1938 yield. This crop is based on plantings of 46,778,000 acres, compared to original seedings of 57,316,000 acres for the 1938 crop.

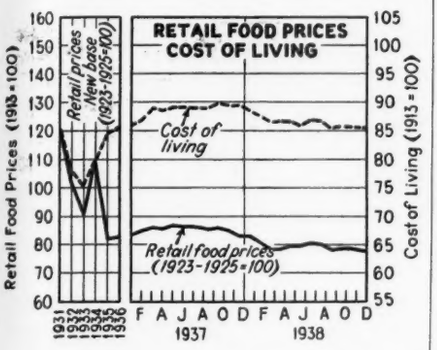
BEANS (dry, edible)—Because of a heavy carry-over of dry edible beans, following large production in 1937 and 1938, there is some prospect that acreage planted in 1939 will be reduced. However, such a reduction is by no means certain, so that estimates of 1939 yield must be made on the basis of planted acreage about equal to that of 1938. This acreage, with a yield equal to the average of the past five years, would give a production of 13,000,000 bags of dry edible beans, 13 per cent below the average of the last two years, but 7 per cent above the average of the last five years.

GRAPEFRUIT — New trees are coming into bearing each year, rapidly increasing the production of grapefruit. Yield in the 1938–39 season, assuming average growing conditions, is expected to be around 40,000,000 boxes,


TRENDS OF PRICES PAID BY FOOD PROCESSORS FOR RAW MATERIALS
N.Y. Journal of Commerce Index of prices of all commodities
All products
Meat animals
Dairy products
Grain
Index Number of Prices Received by Farmers, U.S. Department of Agriculture (Aug. 1909-1914=100)
N.Y. Journal of Commerce Index of Commodity Prices (Jan. 17, 1931=100)
J F M A M J J A S O N D J F M A M J J A S O N D J
1937
1938


TRENDS AFFECTING MARKET FOR THE FOOD MANUFACTURERS' PRODUCTS
Business activity index
Employment, all industry
Payrolls, all industry
Adjust to 1935 Census of Manufacturers
Business Activity 1923-1925=100
Yearly Average 1933-1936
Employment and Payrolls 1923-1925=100
1933
1934
1935
1936
J F M A M J J A S O N D J F M A M J J A S O N D J
1937
1938





nearly 10,000,000 boxes above the 1937–38 crop.

STRAWBERRIES—Indicated acreage for 1939 is 197,000 acres. If the yield per acre equals the ten-year average, strawberry production should be about 300,000,000 qt., about 9 per cent above the 1938 figure.

GRAPES—Production is expected to be above the 1927–36 average of 2,197,000 tons, but below the 2,649,000 tons actual production of 1937–38.

WATERMELONS — Production of watermelons in 1939 is expected to be somewhat larger than the medium-sized crop of 1938, provided an average yield is realized from the acreage to be planted.

CHERRIES—Since the production of cherries is expected to increase over the next five years, average growing conditions should give a slightly larger crop in 1939 than the average of 1934–38 crops.

CELERY — Celery production in 1939, based on anticipated acreage, will be somewhat less than the 1938 production of about 12,000,000 crates.

CABBAGE—Acreage planted to cabbage is likely to decrease rather sharply in 1939, as compared to 1938. Allowing for average yields per acre, this would indicate a considerably smaller crop in 1939 than in 1938, when per acre yields were high.

ONIONS—A small decrease in acreage planted to onions is in prospect for 1939. With average growing conditions the yield is also likely to be below the 14,705,000 sacks produced in 1938.

Data for the Curves

In preparing the curves of this and preceding pages data were obtained from the following sources: Prices received by farmers and data on livestock; U.S. Department of Agriculture; Employment, payrolls, wholesale prices and retail prices, U.S. Department of Labor; Cost of Living, National Industrial Conference Board; Commodity price index, *New York Journal of Commerce;* Business activity index, *Business Week.*

Dairy Prospects for 1939

Decline in milk cow numbers, which started in 1934, has been checked and increasing dairy herds are now in prospect. Feed supplies are abundant and prices of milk cows are high as compared to the general level of agricultural prices. This stimulates the saving of heifer calves and tends to reduce culling. It is likely that farmers are preparing to increase rapidly the numbers of both milk cows and other cattle.

With present herds of milk cows relatively low in numbers, prices of dairy products are expected to continue at comparatively high levels, in spite of low feed costs. However, milk production per cow is at very high levels and, with herds increasing, dairy products supplies should be expected to be above previous averages in 1939.

INDICATORS

SWEET CORN production for canning, exclusive of corn on cob, in 1938 is estimated at 20,846,842 cases, according to the National Canners Association. This compares to 24,323,050 cases in 1937.

PEAS canned in 1938, according to revised estimates of the National Canners Association, totaled 25,395,315 cases.

SUGAR deliveries, first nine months of 1938, totaled 4,896,352 short tons, raw value, according to the sugar division of the Department of Agriculture. This compares to 5,336,849 short tons in the same period of 1937.

SALES OF CONFECTIONERY and competitive chocolate products in September, 1938, were 7 per cent below sales for September, 1937, according to the Department of Commerce.

OLEOMARGARINE SALES in October, 1938, were 29,955,918 lb., which was 27.5 per cent below sales in October, 1937. In contrast, oleomargarine sales for the first ten months of 1938 were 320,713,663 lb., an increase of 0.66 per cent over the like period of 1937.

FLOUR PRODUCTION in November, 1938, equaled 5,588,200 bbl., compared to 5,617,375 bbl. in November, 1937, according to reports made to *The Northwestern Miller* by mills representing 60 per cent of the output of the country.

GREEN AND WAX BEAN PACK in 1938 totaled 10,331,675 actual cases all sizes compared to 9,538,613 actual cases in 1937, according to the National Canners Association.

LIMA BEAN PACK, fresh, in 1938 amounted to 1,792,926 actual cases, compared to 1,449,040 cases in 1937, according to the National Canners Association.

CUCUMBERS FOR PICKLES produced in 1938 totaled 5,948,000 bu., according to the U.S. Department of Agriculture, which was 26 per cent below the 8,033,000 bu. recorded in 1937.

COCOA BEAN IMPORTATIONS, first eleven months of 1938, totaled 2,901,358 bags, compared to 4,083,088 bags for the corresponding months of 1937.

COFFEE DELIVERIES in the United States, July to November, 1938, inclusive, were 5,597,146 bags, compared to 4,515,259 bags for the same five months of 1937.

FROZEN FRUITS in storage, quick frozen and cold packed, on Dec. 1, 1938, amounted to 136,657,000 lb., compared to 132,558,000 lb. on Dec. 1, 1937, and a 1933-1937 average of 84,104,000 lb. for the date.

FROZEN VEGETABLES in storage on Dec. 1, 1938, totaled 68,759,000 lb., compared to 32,503,000 lb. on Dec. 1, 1937.

BUTTER, creamery, in storage on Dec. 1, 1938, was 158,872,000 lb., of which 97,882,000 lb. was held by Dairy Products Marketing Association. Butter in storage on Dec. 1, 1937, was 66,191,000 lb., and the 1933-1937 average for the date was 89,241,000 lb.

CHEESE, all kinds, in storage, Dec. 1, 1938, was 127,599,000 lb., compared to 108,497,000 lb. on Dec. 1, 1937, and an average for the date, 1933-1937, of 107,369,000 lb.

EGGS, case equivalent, in storage on Dec. 1, 1938, were 3,763,000 cases. On Dec. 1, 1937, the figure was 6,127,000 cases, and the 1933-1937 average for Dec. 1 was 4,807,000 cases.

POULTRY, frozen, in storage on Dec. 1, 1938, was 117,837,000 lb., compared to 108,746,000 lb. on Dec. 1, 1937, and a Dec. 1 average for 1933-1937 of 108,202,000 lb.

MEAT, all kinds, in cure and storage on Dec. 1, 1938, totaled 406,179,000 lb., compared to 413,203,000 lb. a year before and a 1933-1937 average for the date of 603,347,000 lb.

LARD in storage, Dec. 1, 1938, was 72,281,000 lb. This compared to 33,966,000 lb. a year before and an average of 80,108,000 lb. for the same date, 1933-1937.

WEEKLY FOOD INDEX of Dun & Bradstreet, Inc., was $2.38 on Dec. 13, 1938, which was 10.62 per cent below the comparative 1937 figure.

Men, Jobs & Companies

INDUSTRY

» BENNETT FOODS Co., Baltimore, has taken over the former branch plant of Western Maryland Dairy and is making extensive alterations.

» BORDEN Co., New York, has purchased Carl Marty & Co., Monroe, Wis., largest independent Swiss cheese manufacturer in the United States. The Marty management will remain the same and the company trade names will be retained.

» BORDEN-WIELAND AND BOWMAN dairy companies, the biggest milk distributors in Chicago, have begun the use of paper milk containers for suburban stores. This development followed the adoption of paper bottles by Dean Milk Co.

» DWINNELL-WRIGHT Co., Boston, has opened a new plant with twelve new coffee roasters and with grinding mills having an hourly capacity of 4,000 lb.

» EXCHANGE LEMON PRODUCTS Co. has awarded contracts for the construction of a two-story steel-and-concrete packing plant at Corona, Calif. The cost will be about $50,000.

» GOOCH FOOD PRODUCTS Co., Lincoln, Neb., has sold its bakery division and will double the capacity of its macaroni plant.

» HILLS BROS. COFFEE, INC., San Francisco, has abandoned a proposal to build a $750,000 coffee roasting and packing plant at Elmhurst, Ill., and is considering other sites in the Chicago area and elsewhere.

» JEWEL TEA Co. has appropriated $80,555 from its 1938 operating income for the establishment of an employee retirement plan.

» LINCOLN (NEB.) MILK PRODUCERS ASSOCIATION will build a milk-processing plant to cost approximately $100,000.

» RATH PACKING Co. has awarded the general contract for construction of a five-story top addition to one of its storage buildings at Waterloo. The improvements will cost about $320,000.

» SOUTHDOWN PLANTATION SUGAR REFINERY, near Houma, La., was destroyed by fire on Dec. 10 with damage estimated as not exceeding $1,500,000. The loss included four warehouse units and the refining section, the cane mill having been saved.

» TINSLEY'S SUNRISE CREAMERY, Huntington, W. Va., has purchased controlling stock of Producers' Milk Co., Ironton, Ohio.

AUTOMATIC LIGHT CONTROL

Van Camp Sea Food Co., Inc., a leading Pacific Coast packer of tuna and sardines, is taking no chances on inadequate lighting in its offices at Terminal Island, Calif. These offices are lighted by four rows of lamps, and each row is controlled independently by a photoelectric switch. Natural lighting is weakest on the northeast side of the offices, so the lights on that side are first to come on and last to go off. The controls are General Electric units

PERSONNEL

» H. G. BERTHOLD is the new president of West Virginia Dairy Products & Ice Cream Manufacturers Association. He is with Imperial Ice Cream Co., Charleston.

» D. S. BINNINGTON, formerly in charge of the durum wheat laboratory of Board of Grain Commissioners for Canada, Winnipeg, has joined the research staff of General Mills, Inc., Minneapolis.

» THOMAS F. BRYCE has been elected president of Horton Pilsener Brewing Co., Inc., New York. He had been vice-president in charge of sales of Krueger Brewing Co., Newark, N. J.

» H. A. BULLIS, vice-president of General Mills, Inc., Minneapolis, is one of the new vice-presidents of National Association of Manufacturers.

» D. W. CREEDEN, former vice-president of Swift & Co., has been named executive vice-president of Libby, McNeill & Libby.

» W. CLARK EVANS has been advanced to executive vice-president of J. B. Carr Biscuit Co., Wilkes-Barre, Pa.

» DR. GEORGE FELTON has been added to the research staff of the American Maize-Products Co. plant at Roby, Ind. Dr. Felton spent several years with General Foods Products Co., Battle Creek, Mich., where he was a carbohydrate specialist. In his new job he will develop new products.

» JULES R. FIELD has become president and director of Central Breweries, St. Louis. He succeeds Kirke L. Bonnell, who retired because of ill health. Mr. Field formerly was secretary of Missouri Brewers Association.

» WILBUR H. GLENN, Columbus, Ga., has succeeded Fred L. Cannon as president of Georgia Bottlers' Association.

» S. B. HORRELL, Carey Salt Co., Hutchinson, Kan., is the new general chairman of the food section executive committee of National Safety Council. D. M. Clark, Society of Grain Elevator Superintendents of North America, is secretary; E. E. Drews, Libby, McNeill & Libby, Chicago, is chairman of the engineering committee.

» J. H. LANDESS, sales manager of Fortune's, Inc., Memphis, has been chosen to head up Southern Ice Cream Manufacturers Association for the coming year. He was vice-president last year.

» JOSEPH F. LEETE now heads up Industrial Sugars Corp., which is erecting a refinery in Chicago to manufacture liquid sugars. Mr. Leete formerly was with National Sugar Refining Co. of New Jersey.

» W. A. LEWIS has been elected president of South Carolina Bottlers' Association, succeeding L. F. Fischer. Mr. Lewis is from Florence.

» HAROLD LUNN, San Francisco, has become treasurer of California Cracker Co.

» THOMAS H. MCINNERNEY, president of National Dairy Products Corp., New York, and Robert H. Cabell, president of Armour & Co., Chicago, have been elected members of the board of directors of the Chamber of Commerce of the United States.

» HARRY MCLERIE has succeeded Charles H. Swift as president of Swift Internacional, Buenos Aires. He had been vice-president of the Argentine firm since 1918. Mr. Swift has been made honorary president of the company. C. R. Kresse and H. H. Luning were elected directors and vice-presidents.

» EINAR B. NELSON, president of Nelson Ice Cream Co., Fairmont, Minn., has succeeded Frank N. Russell as head of the Northwest Association of Ice Cream Manufacturers.

» H. L. PERRIGO, president of Victor Flour Mills, Inc., Pittsford, again heads up New York State Millers Association.

» Dr. D. R. PORTER has become connected with Campbell Soup Co., Camden, N. J., in a research capacity and will be concerned with vegetable breeding for quality and disease resistance. Dr. Porter had been associate professor of truck crops at the University of California's College of Agriculture.

» CHESTER A. RAY, New Era, Mich., has been reelected president of Michigan Canners' Association.

» ROBERT B. SCHENKEL, Greencastle Packing Co., has been elected president by the Pennsylvania canners.

» DR. H. H. SCHOPMEYER has been appointed director of research and new products development by American Maize-Products Co., Roby, Ind., succeeding J. F. Walsh. Dr. Schopmeyer formerly was connected with the bacteriological laboratories of the Union Solvents Corp., Cincinnati.

» GEORGE H. STEUBER again is president of Wisconsin Association of Ice Cream Manufacturers.

» WILLIAM L. SWEET, president of Rumford Co., Rumford, R. I., has been made chairman of the board.

» A. F. TREBILCOCK, Madison, has been reelected president of Wisconsin Association of Ice Cream Manufacturers.

» MARTIN VAN ANTWERPEN, Milwaukee, again heads up Wisconsin Milk Dealers' Association.

★ Cercon is an edible, tasteless wax suitable for coating food products requiring protection from the air.

It is supplied in six colors—Snowdrift, Lemon, Orange, Tangerine, Apricot, and Olive. It has an ASTM penetration of 50 with the 50 gram weight attached.

We will be very glad to send test samples to any interested company.

THE CONEWANGO REFINING CO.
WARREN, PENNSYLVANIA

» PAUL H. WOLF has been elected president of Indiana Canners Association. He is manager of the Roach-Indiana Corp., Gwynnesville, Ind.

» CHARLES F. YOST, for 35 years in the baking business in Kansas City, Mo., has purchased the bakery department of Gooch Food Products Co., Lincoln, Neb.

Correction

» DR. P. HONIG, director of the Java Sugar Experiment Station, is the new general chairman of International Society of Sugar Cane Technologists and is not vice-chairman, as reported in this column last month. E. W. Brandes was not appointed chairman of the society as reported, nor was C. W. Edgerton elected general secretary.

DEATHS

» LOUIS BARTL, 58, in charge of brewing operations of Food City Brewing Co., Battle Creek, Mich., Nov. 27.

» FREDERICK W. CROLL, 75, formerly treasurer and vice-president of Armour & Co., Nov. 24, at Glencoe, Ill.

» G. G. DOLING, 85, pioneer Ohio baker who opened the Doling Bakery at Ada in 1900, recently.

» JOHN W. ECKHART, 48, president of John W. Eckhart & Co., Chicago, Dec. 7.

» FRED P. FREY, 54, who organized the Frey Sausage Co., Cincinnati, 25 years ago, recently.

» WILLIAM J. MONAGHAN, 41, vice-president, in charge of sales and advertising, of the Pioneer Ice Cream Division of The Borden Co., New York, Nov. 26.

» SEBASTIAN MUELLER, 78, senior vice-president and director of H. J. Heinz Co., Pittsburgh, Nov. 17. He was in charge of manufacturing operations for many years.

» ROBERT W. MUIR, 55, secretary and general counsel of the Jewel Tea Co., Inc., Nov. 30, at Chicago.

» WILLIAM F. SCHRAG, 57, president of the Freeport, (Ill.) Baking Co., Dec. 8.

» JACOB SIEGEL, 64, president and chairman of the board of Eichler Brewing Co., New York, recently.

» JOHN E. WAGNER, 67, for 22 years treasurer of Cudahy Packing Co., Chicago, Nov. 16.

ASSOCIATED INDUSTRIES

» CATERPILLAR TRACTOR CO., Peoria, Ill., has elected W. O. Bates, Jr., a vice-president. And the company has appointed Donald A. Robinson general sales manager.

» CENTURY ELECTRIC CO., St. Louis, has appointed Fred Powers regional sales manager of its southwest zone.

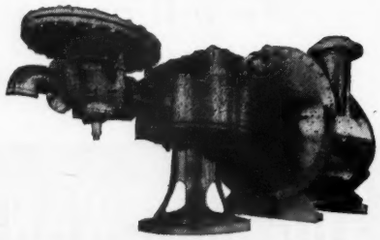
» NATIONAL CAN. CORP., Hamilton, Ohio, has named Heber H. Atkins western district sales manager of its sanitary can division.

» TAYLOR INSTRUMENT COS., Rochester, N. Y., has elected Lewis B. Swift president to succeed Herbert J. Winn, who becomes chairman of the board. Karl H. Hubbard has been appointed chief engineer in charge of engineering research and design.

» WORTHINGTON PUMP & MACHINERY CORP., Harrison, N. J., has appointed Walter B. Strong assistant general sales manager.

BAKERS are swinging to those amazingly economical *band* ovens, Kemp-fired *band* ovens. Now-a-days when bakers meet there's a jam session on what you can do, how much you can save, how *fast* you can produce with band ovens fed with 100 percent premixed gas-and-air from the Kemp Industrial Carburetor and fired in Kemp ribbon-flame burners . . . It's sweet and hot! For words and music, write, wire or phone The

C. M. Kemp Mfg. Co.,
405 East Oliver Street,
Baltimore, Maryland.



KEMP of BALTIMORE

Metering Makes Money

(*Continued from page 7*)

of the measuring operation to warrant its being put on an automatic or mechanical basis. Second, the volume of the liquid material handled should be great enough to make handling expensive and likely to serious error if done manually on a batch basis.

In the case of a recent installation, our fifth, made for the handling of vegetable oil, all of these factors were taken into account before an attempt was made to meter the oil. The net result is that the meter in six weeks has not only paid for itself, but has begun to return worth-while net savings. In this instance, special attention had to be given to maintenance of uniform temperature at time of measuring. Oil has a relatively high coefficient of expansion, which means that its temperature must be kept within a relatively narrow range of temperature to get accurate results with meters. In this case, we have calibrated the meter for a temperature range of 105 to 115 deg. F. Any other range suitable for the oil handled would be equally satisfactory.

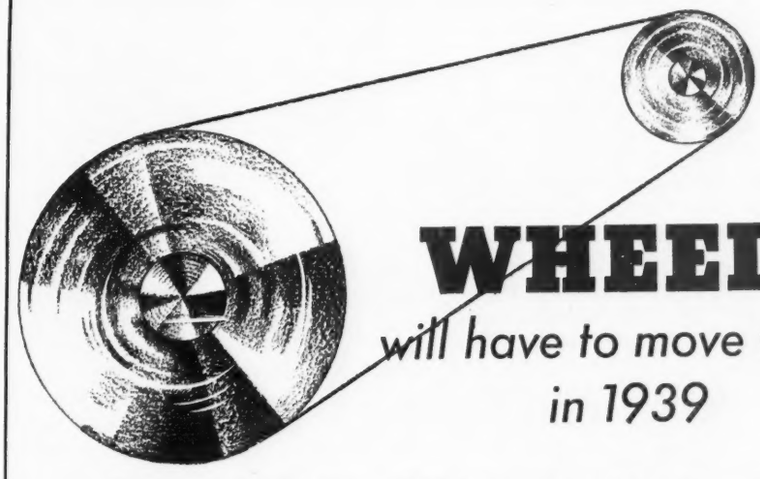
There are handicaps to automatic metering which should be recognized and either overcome or avoided. Among the most important are:

(*a*) With present day meters accuracy, as stated previously depends to a large extent upon the rate of flow of the material going through them. Given a meter calibrated to operate at 100 per cent accuracy at 10 gal. per minute, its accuracy is likely to fall to 95 per cent when operating at the rate of 1 gal. per minute or rise to an apparent so-called "accuracy" of 103 to 104 per cent when operating at the rate of 20 gal. per minute;

(*b*) With the present manually operated type of valves with the automatic trip or cut-off attached to the clock mechanism or the measuring mechanism, there are occasional jams during which either the valve lags in its closing or it closes ahead of time. This type of difficulty, however, is of a mechanical nature and can be easily remedied. Solenoid valves and differential pressure operative valves are available and can be fitted into the system as a help in correcting this fault;

(*c*) With comparatively high rates of flow when small increments of measuring are desired, the friction in or inertia of the meter may be so high that its operation will not be consistent. An example of this difficulty may be found in the measuring of water in pounds when the flow may be at the rate of 10 to 50 lb. per minute. The train of gears necessary to make the required reductions to measure a 1 lb. increment may be so large that the internal resistance creates a drag on the measuring device for which no complete compensation can be made. It may be true that a smaller meter for a lower rate of flow might be accurate for the same increment of measurement. However, conditions can conceivably arise in which both large and small rates of flow may be needed at different times from the same meter.

Present day meter construction is such that accuracy is obtainable within a range of 1 lb. at a setting of 100 to 500 lb. when operating under a gravity fall of 15 ft. In some cases satisfactory performance is obtained under a gravity fall of only 4 ft. This type of construction is in contrast to the former meter construction that required a gravity fall of about 30 ft. or a positive pressure of 15 lb. per sq. in. from a pump or through the use of compressed air.



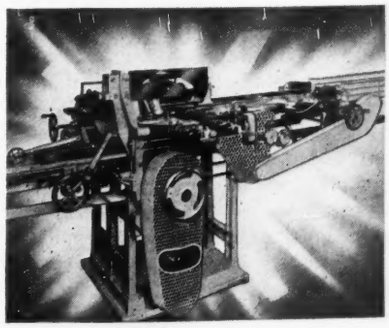
WHEELS
will have to move faster in 1939

Shorter working hours and higher wages call for better production methods in 1939. The wheels of industry will have to move *faster*.

That executives are aware of this is shown by the orders we are receiving for new and faster wrapping machines.

But speed is not the only essential. With speed must be combined genuine all-around efficiency . . . The machines must be simple and easy for operators to handle . . . They should be versatile — built to accommodate a variety of package sizes, and to permit a change in package style, if necessary. In short, your modern wrapping machine must be a flexible and accommodating servant as well as a fast one.

During the past 25 years, we have taken a leading part in the development of such machines. Many of the most outstanding improvements were first introduced on our models. And today, our line of machines consists of 78 different types, covering virtually every wrapping requirement in modern industry. With such wide choice, you will find a machine ideally suited to your individual needs . . . a machine to wrap *your* product in the most modern and efficient way possible.



Comparison of our new machines with your present equipment will show you in dollars-and-cents what we can offer you. Why not make the comparison?

Get in touch with our nearest office. Or write for Literature.

PACKAGE MACHINERY COMPANY, Springfield, Massachusetts

NEW YORK CHICAGO CLEVELAND LOS ANGELES

Peterborough, England: Baker Perkins Ltd.
Mexico, D. F., Apartado 2303
Melbourne, Australia: Baker Perkins Pty., Ltd.
Buenos Aires, Argentina: David H. Orton, Maipu 231

PACKAGE MACHINERY COMPANY
Over a Quarter Billion Packages per day are wrapped on our Machines

Quick Frozen Foods In Cans

(Continued from page 11)

products in a continuous freezer of this type. Tests were also conducted using containers with and without enamel lining and with the product packed dry as well as in brine and syrup.

The freezing unit utilizes proven mechanical principles common to standard cannery practice, with modifications of materials capable of withstanding the low temperatures employed and the type of refrigerant used. The freezing machine consists of a horizontal cylindrical steel tank within which are mounted the other principal elements. These include a hollow, airtight steel drum concentric with the outer shell providing an annular space just sufficient to permit the cans to roll around freely. The inner drum, which revolves, is equipped with paddles to propel the cans, and the outer shell, with a series of circumferential guides in the form of a helix to provide longitudinal motion. An elevator and feed sprocket are set at the entering end and an extractor sprocket and elevator at the discharge end. The refrigerant used during the tests was "Synasol," a proprietary solvent having an ethyl alcohol base. It flows through the freezer contra-directional to the movement of the cans. This results in a high velocity flow over and around the cans, giving the best conditions for efficient heat transfer. The helical path of the cans has the inherent advantage of assuring constant agitation of the cans during the freezing process and, in the case of juices, prevents separation.

Associated with the test freezer are a circulating pump, a conventional shell and tube cooler, and a storage tank for excess refrigerant. The cooler is directly connected to the ammonia lines of the cold storage plant. Freezer, cooler and pump are completely encased in a wooden framework which has 12 in. of granulated cork for insulation. Suitable panels are provided where it might prove necessary to obtain access to the equipment.

THE TEST PLANT, in addition to the freezer, includes such standard cannery equipment as a filling or syruping machine, a vacuum closer, conveyors, and elevator. In operation, the cans pass from an open-can sterilizer, through a filler, a vacuum closer, and the new freezer, out the discharge end to a packaging table and from there to storage.

During the tests, refrigerating temperatures ranging from minus 15 to minus 38 deg. F., were employed, dependent upon the product being processed. The test freezer is designed for No. 211x414 cans, although a unit may be designed for any standard can size. Because of the flexibility of the variable speed drive, it was possible to operate the freezer at many different speeds to determine both the rate of freezing in various products and the most desirable speed for each product. The range was from 23 to 54 cans per minute, with a freezing time of from 14 to 24 minutes. It is possible to engineer a freezer for a speed of 120 cans per minute or more. Because of the rotation of each can on its axis as it passes through the machine, the product freezes from the outside of the can toward the center. Due to an equal heat transfer on the entire surface of the can the head space which is left to allow for expansion becomes a hollow cylindrical space at the center of the frozen material in the can.

In order to obtain accurate data on the performance of the freezer, a temperature measuring system was worked out using thermocouples placed at strategic points in the freezer and refrigerating system which gives instant and accurate temperature readings during the operation of the freezer.

Approximately 14,500 cans of test product had been run through the freezer up to the end of November. All of these are being, and will continue to be, officially checked and observed over a period of time by the research departments of interested or associated organizations. From these tests it is believed that it is practical to construct and operate continuous freezers both from the standpoint of the superior quality of the product produced and from the standpoint of a satisfactory hermetically sealed container. The product is easy to handle. The observed cost of freezing is moderate and the space occupied by the plant is small as compared to other methods now in use.

Food Freezers, Inc., has brought into cooperation the various interested parties so that the company will be in a position to furnish a sales and engineering service to the industry which coordinates the freezing process with food processing equipment and refrigerating machinery.

CERTAIN definite conclusions can be drawn as a result of the operation of this test unit. In the first place, the continuous quick freezer lends itself to several applications as regards the necessary refrigeration where this is available or in a cold storage plant. The material saving in labor costs permits a high output per man-hour and the compact design requires a minimum of floor space. It is believed that the canning accomplishments that have already been attained, plus this economical method of quick freezing utilizing cannery standardization, should result in attractive costs that will benefit packer as well as consumer. Finally, an outlet can be developed for ripe fruits that ordinarily could not be packed or may not be acceptable for cooking or fresh sales.

Cutting bee to demonstrate quality of frozen products

The Right Food Color

(*Continued from page 13*)

as an adulterant (as egg yolk color in noodles containing no egg). For this purpose, the manufacture and distribution of certified food colors are under the control of the United States Department of Agriculture. Any color manufactured for use in food must be submitted to the Color Certification Laboratory in Washington, D. C., for approval and certification. Furthermore, records must be kept so that the distribution of permitted, certified food colors can be checked. Industries using artificial food colors must declare that fact on the label or container of the prepared product, except in the case of food excepted by law, such as butter, cheese and ice cream.

There are two general classes of food colors: vegetable colors and coal tar dyes. These are available in three forms: powder, paste, liquid. There are water soluble and oil soluble colors. Food colors are certified in three forms: primary colors, repacks, mixtures.

Primary Colors include coal tar dyes as originally manufactured and packed by the original manufacturer.

Repacks are primary colors repacked in smaller lots from an original certified batch, by retailers or by those who do not wish to manufacture some particular color.

Mixtures are a combination of two or more primary colors to obtain a desired shade that cannot be secured with primary colors. Such mixtures must be recertified before placing on the market. When two primary colors are blended the result is known as a secondary color. When a secondary color is mixed with a primary color, the result is a tertiary color. For example, a green, resulting from mixing a yellow and a blue, when combined with an excess of red, will probably yield a brown.

The art of blending colors results from experience in preparing various shades. Some basic formulas for blending colors are listed below.

Liquid Colors

To prepare liquid colors, oil soluble colors are dissolved in vegetable oils; water soluble colors are dissolved in water, preferable distilled water, or the softest water obtainable which has first been boiled. Best results are obtained by bringing the water to a boil and then allowing it to cool to about 180 deg. F. At this temperature, the color is added slowly and stirred until thoroughly dissolved.

In case the color solution is to be kept for any length of time, it is advisable to add 10 per cent of alcohol (13 oz. per gallon of water) or 25 per cent of glycerine (32 oz. per gallon of water) by volume. After the

Basic Formulas for Blending Colors

For egg yellow
85 parts Tartrazine, Certified
15 parts Orange I, Certified

For orange
70 parts Tartrazine, Certified
30 parts Poncean 3R, Certified

For lime green
97 parts Tartrazine, Certified
3 parts Guinea Green B, Certified

For mint green
60 parts Tartrazine, Certified
40 parts Guinea Green B, Certified

For violet
80 parts Amaranth, Certified
20 parts Brilliant Blue, Certified

For bluish grape
85 parts Amaranth, Certified
15 parts Brilliant Blue, Certified

For reddish grape.
90 Parts Amaranth, Certified
10 parts Brilliant Blue, Certified

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- SETS to a smooth, creamy body—firm, yet free from lumps and graininess.
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solution has cooled, it should be placed in glass or porcelain enameled vessels. Four ounces of dry color dissolved in 1 gal. of water (a 3 per cent solution) is considered a standard for stock color solutions.

Precautions

Since various agents affect the stability of color solutions, it is recommended that the following be guarded against:

1. Bleaching agents, such as excessive sunlight and chemicals with an oxidizing or reducing action.

2. Bacterial growth, which produces biochemical agents affecting the color stability of the color solutions.

Bacterial contamination not only destroys color, but also will produce off-flavors in the finished product. Also, the bacterial content of a food will be seriously increased when color solutions contaminated with bacteria are used. Special precautions, therefore, should be taken to avoid bacterial contamination of colors.

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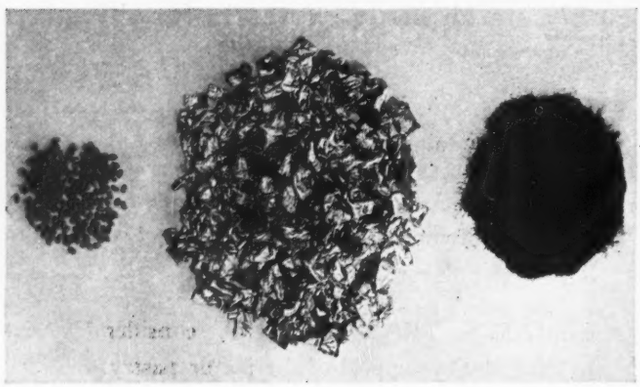

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APW THE AMERICAN PLATINUM WORKS APW

Newark, N. J.

Popping Quality of Corn

(*Continued from page 14*)

This advantage was lost, however, at the end of ten days, when the popping quality of the corn was found to have returned to normal.

Fumigation with carbon disulphide at the rate of 30 lb. per 1,000 bu. had no noticeable effect upon the popping quality, but when this dosage was increased to 60 lb. there was a marked deleterious effect on the popping quality, resulting in a decrease of 24 per cent below normal of the volume of the corn popped one day after treatment. Ten days after treatment the corn still showed the effects of the excessive fumigation, the volume of popped samples being 8 per cent below normal. At the end of 30 days, however, the deleterious effects had completely disappeared and the volume of the popped samples was again at normal.

FUMIGATION with ethylene oxide had littl eeffect upon the popping quality of the corn. The volume of the treated samples of corn popped one day after fumigation was in each case 2 per cent less than that of the unfumigated sample. This deviation in volume is within the range of experimental error.

The vapors of carbon tetrachloride affected the popping quality adversely, particularly when a dosage of 60 lb. per 1,000 bu. was applied. When subjected to this concentration, the volume of the corn was 16 per cent lower than normal when popped one day after treatment. This adverse effect was still evident, though not so pronounced, at the end of ten days but had disappeared at the end of a 30 days period.

Chloropicrin and ethylene dichloride both had a bad effect upon the popping quality of the corn, although in each case the effect was temporary. Fumigation with a dosage of 40 lb. of ethylene dichloride per 1,000 bu. caused a reduction in volume of the treated sample when popped of 22 per cent below normal, and a reduction of 11 per cent below normal volume was caused by fumigation with 6 lb. of chloropicrin per 1,000 bu. Ten days after fumigation with these two fumigants the corn popped to normal volume.

It seems likely that the vapors of many of our fumigants temporarily affect the permeability of the membrane covering the corn, thus preventing the maximum popping action. The adverse effect persists in some cases for two weeks or more but always disappears after an interval of 30 days.

BOOKS RECEIVED

FOOD INDUSTRIES CATALOGS AND DIRECTORY 1938–1939. Published by FOOD INDUSTRIES, 330 W. 42d St., New York, N. Y. 253 pages, 8¾x11⅝ in. Cloth. Free to those responsible parties in food manufacturing concerns who requested it when the announcement was made. To all others, price $5.

This volume is the first annual edition of a combination of manufacturer's catalogs, buyer's guide, alphabetical company-name and trade-name index and a reference section, the latter containing data of value to all food manufacturers. It offers a complete reference book on where to buy equipment, materials and supplies, together with catalog information about many items that are often difficult to locate. Indexing is by company name, trade-name and function.

Section 3 of the Catalog, extending from pages 157 to 228, is worthy of particular mention for it combines much information that is extremely valuable and exceedingly difficult to locate. This section brings together in one volume most of the pertinent state food regulations with which food manufacturers must comply for interstate business. These are the *regulations*—not the laws. The section lists the federal laws affecting food composition and labeling, gives the personnel and location of the officials of the Federal Food and Drug Administration and includes all the food provisions of the Federal Food, Drug, and Cosmetic Act which becomes effective on June 25, 1939.

A list of all the agencies charged with the enforcement of state laws pertaining to food composition and labeling is also given, together with the names of the personnel in charge and their titles and addresses.

The digest of state food regulations, which is the major feature of the section is, it is stated, the first time that all the regulations from the 48 different states have been assembled, digested and compared. Heretofore, only the state food laws (without the regulations) have been available in the monumental work of Charles Wesley Dunn: "Dunn's Food and Drug Laws" (5 volumes). In the FOOD INDUSTRIES catalog the plan has been followed of tabulating the several regulatory requirements so that one can see at a glance what states have regulations on a given subject, what states have similar or differing requirements and, by referring to accompanying notes, ascertain what the requirements are. Subjects covered in the digest include: labeling requirements, scope, definitions, type sizes, name and place of manufacturer and producer, "packed by" or "packed for," character of name of food, mixtures, compounds, etc.; permitted preservatives, bleaches, spray residues; prohibited preservatives and sweeteners; artificial colors, regulations covering milk, cream and evaporated-milk products; licenses required in dairy industries, regulations pertaining to cheese; non-alcoholic beverage regulations; and a table of state appropriations covering food-law enforcement.

In addition to the foregoing, the section contains a list of all associations of interest to food manufacturers, divided into two groups: national and regional, and state and

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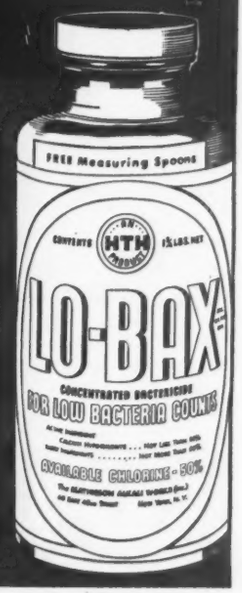

SPOILAGE losses from bacterial contamination will take an enormous toll of profits in many food plants during 1938. Have you taken steps to safeguard *your* products by means of a rigid sanitary routine coupled with a dependable, quick-acting sterilizer like Lo-Bax? This convenient germ-killer is so economical that you can use it everywhere—on equipment, containers, floors, walls, ceilings. Write us for full information.

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local; also a directory of scientific, technical and professional societies. Included also in this section are flow diagrams for the production of 21 different foods.

The volume is one which every food manufacturer should own and keep handy. According to the plans of the publishers, the future annual issues will be greatly enlarged as to scope of the digest of state food regulations and will be brought up to date in each succeeding issue.

BEVERAGE MANUFACTURE (Non-alcoholic). By R. Harold Morgan. Published by Attwood & Co., Ltd., St. Ann's Chambers, Waithman St., London, E.C.4. 5¾x8¾ in., 240 pages; cloth. Price, 30 shillings (about $7.20).

Practical material for the bottling plant technologist or engineer is contained between the covers of this book. The information is presented in two parts. The first pertains to the products and the process. The second, to equipment and the plant. There are chapters on syrup making, syrup room equipment, carbonation, water, preservatives, color, flavors, aerated beverages, cordials, wines and syrups, fruit juices, fruit juice beverages, non-alcoholic brewing, and standards and control. Some handy reference tables on syrup densities, suitability of materials for construction of syrup equipment and solubility of carbon dioxide are contained. The material on plant and equipment covers building the plant, selection, maintenance and installment of equipment, bottle washing, and bottle packing.

Some of the material in the second section is of interest to food engineers in general, because the principles involved apply to other than bottling plants.

GUINEA PIGS AND BUG BEARS. By G. L. Eskew. Published by Research Press, P. O. Box 301, St. Louis, 1938. 272 pages; 6½x9 in.; cloth. Price $1.50.

Intended as an antidote for what the author calls the mental poisoning dispensed to consumers by F. J. Schlink and his associates in Consumers' Research, this book is a common-sense piece of writing. Being common-sense, it is not as sensational as the literature which it debunks, and hence it probably will not be as widely read, which is unfortunate. But those who do read it will get quite a different opinion of the manufacturers of food, drugs and other consumer produces than that gained by reading the works of Schlink *et al.*

While the information in the book will be enlightening to consumers, there is little in it that manufacturers have not long known, except perhaps for some revealing facts on Consumers' Research and its activities as a "non-profit" organization. That material, incidentally, will be worth the price of the book to manufacturers whose products have been subject to attack. Moreover, it might come in handy in answering complaints from consumers whose thinking has been influenced by Schlink *et al.*

INDEX TO THE LITERATURE OF FOOD INVESTIGATION, Vol. 10, No. 1, June, 1938. Published by the British Government. Obtainable in North America from British Library of Information, 270 Madison Ave., New York, N. Y. 6x9¾ in.; 94 pages; paper. Price $1.35. References to important papers and articles dealing with the science of food technology are included.

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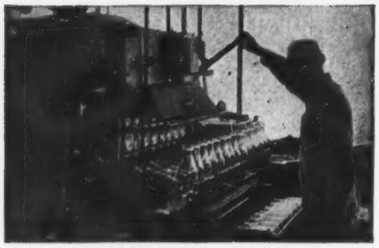

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Ice Cream and the Like Brought up to Desired Gas Content by Injection of Gas Into Partially Frozen Mass—Chester Earl Gray and Grover D. Turnbow, Oakland, Calif. Nos. 2,131,510 and 2,131,511. Sept. 27, 1938.

Fruit Whip Made From Mixture of Concentrated Soluble Milk Serum, Crushed Fruit and Flavoring; Milk Serum Solids Range From 6 to 14 Per Cent—Byron H. Webb, Washington, D. C. to Secretary of Agriculture of the United States of America. No. 2,131,650. Sept. 27, 1938.

Viscous Fluid Converted to a Cooled Dehydrated Form During Passage Over Surfaces of Heating Drum and Cooling Cylinder Discharging Into a Cooling Compartment for Removal of Material After Cooling—Shirley A. McDougall, to Dextora Co., Indianapolis, Ind. No. 2,131,666. Sept. 27, 1938.

Bread Made From Whole Grain Converted to Dough-Like State by Partial Milling, Soaking to Soften, and Passing Through Multiple Steel Rolls Under Pressure—Schachna Maurice Salamon and Sune Busch, London, England to Sunbred Limited, London, England. No. 2,131,674. Sept. 27, 1938.

Starch Conversion Products With Granular Structure Made by Heating the Air Dry Starch to 130 Deg. C. With 2 to 5 Per Cent Urea—George V. Caesar, to Stein Hall & Co., Inc., New York, N. Y. No. 2,131,724. Oct. 4, 1938.

Lollypop Confections Formed on Rod-Like Handles Made With a Flexible Fibrous Core and a Smooth Continuous Compounded-Rubber Covering—Harry E. Davis, Akron, Ohio. No. 2,131,727. Oct. 4, 1938.

Vegetables Sliced on a Machine Equipped With a Rotatable Knife-Carrying Shaft and Endless Coveyor—Mortimer R. Anstice, to Josiah Anstice & Co., Inc., Rochester, N. Y. No. 2,131,851. Oct. 4, 1938.

Beer and Wine Clarified and Sterilized in Enclosed System Under Greater Than Atmosphere Pressure by Centrifuging—Douglas Percy Shoolbred Fox, London, England, to The DeLaval Separator Co., New York, N. Y. No. 2,131,885. Oct. 4, 1938.

Fish Packed in Marketing Container, Heat Treated, and Drained of Excess Oil Before Sealing—David D. Peebles, Eureka, Paul D. V. Manning, Berkely Woods, and Alfred H. Potbury, Berkeley, Calif., to F. E. Booth Co., Inc., San Francisco, Calif. No. 2,131,902. Oct. 4, 1938.

Fat and Oils Stabilized Against Rancidity by Treatment With a Polyhydric Phenol—Paul L. Salzberg, to E. I. du Pont de Nemours & Co., Wilmington, Del. No. 2,131,904. Oct. 4, 1938.

Pectates of Alkali Metals and Ammonium Made From Crude Pectin-Containing Pulp—Clarence Walter Wilson, Corona, Calif. to California Fruit Growers Exchange, Los Angeles, Calif. No. 2,132,065. Oct. 4, 1938.

Blue-Veined Cheese Made From Milk Homogenized Under Pressures of 1000 to 4000 Lb. Per Sq. In. at Below 110 Deg. F.—Clarence B. Lane and Bernard W. Hammer, to Iowa State College Alumni Assn., Inc. Ames, Iowa. No. 2,132,077. Oct. 4, 1938.

Fresh Raw Milk in Small Percentage Added to Pasteurized Yeast Mash for Whisky Distillation—Casey J. Wilken, Sunset Hills, Va. No. 2,132,091. Oct. 4, 1938.

Milk Homogenized and Raised in Temperature for Filtering—Charles Doering and Henry Doering, Chicago, Ill. No. 2,132,099. Oct. 4, 1938.

Sliced Bread Wrapped in Transparent or Translucent Moisture-Proof, Air-Proof Material Which Permits Breaking of Pacakge Into Les Than Loaf Units.—Harry Blum, New York, N. Y. one-fourth to Herbert J. Jacobi, one-fourth to William J. Jacobi, Washington, D. C. one-half to Harry Blum's Natural Bloom, Inc., New York, N. Y. No. 2,132,144. Oct. 4, 1938.

Bread Dough Twisted by Mechanical Means—Carl C. Guldbech, Bronx, N. Y. No. 2,132,158. Oct. 4, 1938.

Starch Particles Separated From Gluten Particles by Homogenizing Liquid Starch Milk for Incorporation of Minute Bubbles of Air—Theodore B. Wagner, Brooklyn, N. Y. No. 2,132,251. Oct. 4, 1938.

Shortening Given Higher Emulsifying Power Through Addition of 4 Per Cent of Fat Heated With Glycerine to Increase Glyceride Content by 0.3 Per Cent—Herbert S. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,393. Oct. 11, 1938.

Shortening Plasticized With the Addition of 2 Per Cent of Hydrogenated Fat Containing Not Less Than 19 Per Cent Combined Glycerin—Herbert S. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,394. Oct. 11, 1938.

Prepared Flour Mix Made From Shortening Containing Synthetic Glycerides of Unsaturated and of Saturated Fatty Acids—Herbert S. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,395. Oct. 11, 1938.

Cakes and Similar Sweet Baked Goods Made to Contain a Synthetic Fat Containing Between 0.3 and 1.5 Per Cent More Glycerin Than Required for a Triglyceride—Herbert C. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,396. Oct. 11, 1938.

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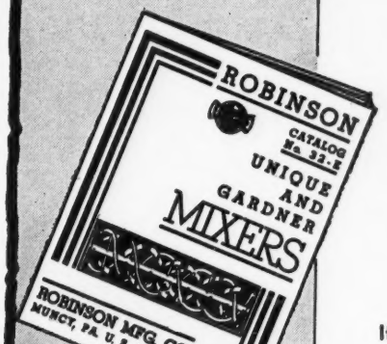

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Cake-Shrink at End of Baking Decreases Through Use of Synthetic Shortening—Herbert S. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,397. Oct. 11, 1938.

Shortening to Decrease Shrink in Cakes Made By Adding to Triglyceride Fat a Lesser Proportion of Hydroxy Fatty Ester Containing at Least Two Unesterified Hydroxyl Groups and Consisting of Polyhydroxy Substances Containing More than Three Carbon Atoms Incompletely Esterified with Higher Fatty Acids—Herbert S. Coith, Albert S. Richardson and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,398. Oct. 11, 1938.

Shortening Made by Adding a Glyceride Ester With at Least One Free Hydroxy Group to Liquid Oil and Hydrogenating Mixture—Albert K. Epstein and Benjamin R. Harris, Chicago, Ill., to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,406. Oct. 11, 1938.

Cake Made From Shortening Having not Less Than 98 Per Cent Triglyceride and not Less Than One Per Cent of Monoglyceride Content—Benjamin R. Harris, Chicago, Ill., to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,416. Oct. 11, 1938.

Cake Batter Emulsion Containing a Shortening Comprising in Part of a Higher Fatty Acid Ester of Glycerine With at Least Two Free Alcoholic Hydroxy Groups—Benjamin R. Harris, Chicago, Ill., to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,417. Oct. 11, 1938.

Prepared Flour Mix Made to Contain a High Melting-Point Hydroxy Fatty Ester With At Least Two Unesterified Hydroxy Groups and Consisting of a Polyhydroxy Substance Containing More Than Three Carbon Atoms Incompletely Esterified With Higher Fatty Acid—Marvin C. Reynolds, Benjamin R. Harris, and Albert K. Epstein, Chicago, Ill.; Lulu E. Reynolds and First National Bank of Chicago, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,436. Oct. 11, 1938.

Fats Given Non-Smoking Properties for Deep-Fat Frying—Albert S. Richardson and Eddy W. Eckey, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,-437. Oct. 11, 1938.

Bottled Beverages Automatically Inspected for Foreign Substance Content by Use of a Beam of Light—George Philip Stout, Decatur, Ga., to Coco-Cola Co., Wilmington, Del. No. 2,132,447. Oct. 11, 1938.

Jellies, Jams and the Like Given Desired Fruit Flavor by Addition of Sugar Whose Normal Water of Crystallization is Replaced by Natural Fruit Juices—Samuel Levison, Evanston, Ill., to Orchard Products Co., Chicago, Ill. No. 2,132,485. Oct. 11, 1938.

Pectin Made From Pectin-Containing Material That Has Been Pickled by Mineral Acids—Aksel G. Olsen, Newtonville, Mass., and Reinhold Stuewer, Battle Creek, Mich., to General Foods Corp., New York, N. Y. No. 2,132,577. Oct. 11, 1938.

Milk Packaged in Paper Container Having Shape of Standard Glass Bottle—Christopher Hamilton Berry, Toronto, Ontario, Canada. No. 2,132,672. Oct. 11, 1938.

Shortening Made to Have Low Emulsified Water Content and to Contain About 1 to 2 Per Cent of Higher Aliphatic Ester of Glycol Containing an Unesterified Glycol Hydroxyl Group—Benjamin R. Harris, Chicago, Ill., to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,687. Oct. 11, 1938.

Yeast-Raised Baked Products Given Tenderness Property Through Use of Shortening Containing Mono- and Diglycerides of Unesterified Hydroxyl Group—Albert S. Rich-Richardson, Herbert S. Coith and Verling M. Votaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,700. Oct. 11, 1938.

Shortening Made Predominately From Unsaturated Higher Fatty Acids Containing a Glycerol Radical Having at Least One Unesterified Hydroxyl Group—Albert S. Richardson, Herbert S. Coith and Verling M. Totaw, Wyoming, Ohio, to Procter & Gamble Co., Cincinnati, Ohio. No. 2,132,701. Oct. 11, 1938.

Glucose Solutions Inoculated With Rhizopus oryzae for Production of Dextro-Lactic Acid—George E. Ward, Dunn-Loring, Va., Lewis B. Lockwood, Washington, D. C., and Orville E. May, Chevy Chase, Md., to Secretary of Agriculture of the United States of America. No. 2,132,712. Oct. 11, 1938.

Coffee and Grains Cleaned by Separating Materials of Different Densities in a Vertical Air Stream—Joseph B. Morgan, Flushing, N. Y., to Jabez Burns & Sons, Inc., New York, N. Y. No. 2,132,961. Oct. 11, 1938.

Cone-Shaped Frozen Confection Formed Around a Stick Handle by Which it May be Lifted or Held—Edson A. O'Brien, Burlington, Wash. No. 2,132,966. Oct. 11, 1938.

Grains Puffed in a Cylindrical, Piston-Operated Gun—Frederick P. Kiewit, Kansas City, Mo. No. 2,132,987. Oct. 11, 1938.

Citrus Fruits Heightened in Color by Use of Powdered, Oil-Soluble, Water-Insoluble Dye Dispersable by Water Soap Solution—David G. Ulray, Tampa, Fla. to H. Grady Zellner, Lakeland, Fla. No. 2,133,064. Oct. 11, 1938.

Peas and Similar Low-Acid Vegetables Neutralized During Canning by Reagent Contained in Coating of Can Which is Nonreactive to Contents of Can Except When Heated—Walter L. Schroder, Hortonville, Wis. No. 2,133,117. Oct. 11, 1938.

Pectin Setting Time Increased by Treating Pectinous Material With Basic Reagent Without Destroying Gelation Properties of Pectin—Raymond E. Cox, Corona, Calif. to California Fruit Growers Exchange, Los Angeles, Calif. No. 2,133,273. Oct. 18, 1938.

Citrus Fruits Heightened in Color by Spraying Heated Waxy Mixture Containing Oil-Soluble Dye on Fruit and Brushing—Jagan N. Sharma, Berkeley, Calif., to Food Machinery Corp., San Jose, Calif. No. 2,133,404. Oct. 18, 1938.

Sausage in Casings Linked by Mechanical Application of Flexible Loop-Forming Strips—Louis A. Molin to Visking Corp., Chicago, Ill. No. 2,133,463. Oct. 18, 1938.

Gluten Water in Starch Manufacture Reused at Stages in Process in Accordance With Quantities of Solubles in Gluten Water—Alfred H. Kelling, Chicago, Ill., to Corn Products Refining Co., New York, N. Y. No. 2,133,543. Oct. 18, 1838.

Green Coffee Berries Cut Into Particles for Removal of Chaff, Ground to Predetermined Size, and Roasted in Absence of Atmosphic Air—Franklin J. Mushaben and Angelic E. Mushaben, Denver, Colo. No. 2,133,559. Oct. 18, 1938.

Frozen Confections Given Protective Coating Made From Corn Syrup and Hydrated Dextrose—Otto C. Stanger and Alva Thompson, Chicago, Ill., to Corn Products Refining Co., New York, N. Y. No. 2,133,586. Oct. 18, 1938.

Zein of Corn in Alcohol-Water Solution Freed of Oil and Color by Treatment with Volatile Aromatic Hydrocarbon Solvent—Lloyd C. Swallen, Pekin, Ill., to Corn Products Refining So., New York, N. Y. No. 2,133,591. Oct. 18, 1938.

Bread Sticks Made From Sliced Bread by Use of Grooved, Heated Plates—William H. Brooks, Fairfax, Calif. No. 2,134,026. Oct. 25, 1938.

Fruits Individually Branded or Trademarked by Mechanical Means—Herbert A. Hamm, Pasadena, Calif. No. 2,134,041. Oct. 25, 1938.

Dried Prunes Softened and Made Tender by Heating to 200 Deg. F. in Solution Having Same Sugar Content as the Dried Prunes Preliminary to Vacuum Packing and Sterilizing—Ralph E. Schaefle, Berkeley, Calif. to Balfour, Guthrie & Co., Limited, San Francisco, Calif. No. 2,134,060. Oct. 25, 1938.

Oils Extracted From Fish Livers Through Use of a Water Absorbent and Oil Repellent Cereal Grain—Hartley A. Wentworth, Saint Andrews, New Brunswick, Canada. No. 2,134,163. Oct. 25, 1938.

Ground Coffee Treated With Water-Insoluble, Sugary and Bassorin-Containing Solution of Gum to Become Self-Filtering—Arthur Roscher and Franz von Herrenburger, to R. Seelig & Hille, Dresden, Germany. No. 2,134,276.

Full-Dressed Poultry Frozen by Directing Fluid Freezing Medium Against Inner and Outer Surfaces of Carcass—Mikail T. Zarotschenzeff, to Z Pack Corp., New York, N. Y. No. 2,134,295. Oct. 25, 1938.

Spice Concentrates Made by Extracting Oleoresins and Essential Oils With Organic Solvent, Evaporating Solvent, Mixing With Salt or Sugar as a Carrier and Drying Under Partial Vacuum Preliminary to Grinding—William J. Stange, to Wm. J. Stange Co., Chicago, Ill. No. 2,134,380. Oct. 25, 1938.

Citrus Fruit Surfaces Grated and Skins Shredded by Mechanical Means on a Volume Production Basis—Orville R. Hawkins, to Florida Gold Citrus Corp., Lake Alfred, Fla. No. 2,134,608. Oct. 25, 1938.

Popcorn Popped on an Industrial Scale in Kettle Supported on Pivot for Charging and Discharging with a Diaphragm-Operated Thermostat Control on Heat—Julian R. Burch, St. Louis, Mo. No. 2,134,682. Nov. 1, 1938.

Corn Gluten Heated with Formaldehyde and Hydrochloric Acid at 200 to 300 Deg. F. for Formation of a Plastic—Gerald J. Leuck, Evanston, Ill., to Corn Products Refining Co., New York, N. Y. No. 2,134,764. Nov. 1, 1938.

Sterilizing Retort Pivotally Hung From a Support to Permit Limited Swinging Movement of Retort During Sterilizing Operations—Frank Gerber, Fremont, Mich., to Gerber, Products Co. No. 2,134,817. Nov. 1, 1938.

Chocolate Mixed and Finely Ground on Rolling Mill Equipped With Mixing Roller Supported Above Feeding and First Milling Roller—Leo Theiner, Prague, Czechoslovakia. No. 2,134,897. Nov. 1, 1938.

Milk Treated With Alkali-Metal Tripolyphosphate to Improve Digestibility—Charles Schwartz, to Hall Laboratories, Inc., Pittsburgh, Pa. No. 2,135,054. Nov. 1, 1938.

Packing House Scrap and Waste Given Digesting Heat Treatment in a Horizontal, Cylindrical Cooker Operating in a Continuous Manner—August Sommermeyer, Berlin-Rudow, Germany. No. 2,135,203. Nov. 1, 1938.

Meat Subjected to Hot Aging or Hot Pickling Treatment at 110 to 140 Deg. F.—Charles C. Guthrie and William S. McEllroy, Pittsburgh, Pa. No. 2,135,334. Nov. 1, 1938.

Nuts Hulled or Shelled by Pair of Oppositely Operating Inclined Rollers Spaced Longitudinally to Inside Chute From Which Nuts Feed—Isadore J. Fisher, Dallas, Tex. No. 2,135,393. Nov. 1, 1938.

Corn Germs Pressed for Removal of Oil and Washed for Removal of Water-Soluble Bitter Constituents Preliminary to Heat Treatment to Gelatinize Starch and Dry—James F. Walsh, Chicago, Ill., to American Maize Products Co. No. 2,135,445. Nov. 1, 1938.

Maize-Containing Grain Meal Subjected to Heat Treatment for Starch Conversion Without Effecting Germ Oil Content—Eugene J. Boroughs, Terre Haute, Ind., to Commercial Solvents Corp., Terre Haute, Ind. No. 2,135,462. Nov. 1, 1938.

Coffee Vacuum Packed in a Flexible Envelope Type Container Impervious to Air and Moisture—Samuel H. Berch, Beverly Hills, Calif. No. 2,135,479. Nov. 8, 1938.

Evaporated Milk Given Desired Viscosity Without Injury to Flavor or Color by the Addition of 0.001 to 0.03 Per Cent Edible Acid to Raw Milk Prior to Evaporation and Flash Sterilization in Can—Charles O. Ball, River Forest, Ill., to American Can Co., New York, N. Y. No. 2,135,489. Nov. 8, 1938.

Soy Beans Soaked in Water, Boiled in Brine, and Dryed Preliminary to Grinding and Milling to Produce Soya Flour—Rollin H. Moulton, Western Springs, Ill., to Soy Bean Products Co., Chicago, Ill. No. 2,135,-591. Nov. 8, 1938.

Soy Beans Soaked in Brine and Cooked in Hot Oil to Become Nut-Like in Flavor—Rollin H. Moulton, Western Springs, Ill., to Soy Bean Products Co., Chicago, Ill. No. 2,135,592. Nov. 8, 1938.

Soy Beans Soaked in Water to Absorb 120 Per Cent of Their Own Weight, Boiled in Brine, and Fried in Oil to Produce a Nut-Like Product—Irving A. Nohe, Chicago, Ill., to Soy Bean Products Co. No. 2,135,593. Nov. 8, 1938.

Soy Beans Soaked in Water to Become Twice Normal Size, Boiled in Brine Containing a Small Amount of Sugar Until Soft and Mealy, Immersed in Hot Oil and Cooked Until Only 2 to 3 Per Cent Moisture Remains to Give Final Product Having Nut-Like Properties—Irving A. Nohe, Oak Park and Rollin H. Moulton, Western Springs, Ill., to Soy Bean Products Co., Chicago, Ill. No. 2,135,594. Nov. 8, 1938.